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Motorized Trail Safety Audit Report

Chequamegon-Nicolet National Forests

Great Divide Ranger District



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EXECUTIVE SUMMARY

The following report addresses all motorized trails on the Chequamegon-Nicolet National Forests (CNNF) being considered for participation in the Wisconsin UTV pilot program

The report describes existing conditions relative to design parameters for four wheel drive vehicles greater than 50 inches and width (UTV) described in FSH 2309.18 Chapter 10. The report also identifies deficiencies and mitigation measures that would result in design parameters or standards meeting the requirements for UTV's as the managed vehicle on CNNF motorized trails.

Trail conditions have been described in summary with general recommendations, as well as with detailed segment by segment descriptions based on known map points or land marks.

Cost estimates for recommended work items have also been included that will provide important information for future trail planning and maintenance.

INTRODUCTION

This report discusses the analysis that was done to determine the existing condition of motorized trails on the Great Divide Ranger District of the Chequamegon-Nicolet National Forests (CNNF) in Wisconsin. Additionally this report will discuss and disclose findings and provide recommendations relative to [design parameters](#), [safety](#), and potential designation for other motorized uses on the Forest motorized trail system.

BACKGROUND

With the increase in motorized recreation on National Forest lands in recent years, the need to provide adequate trail systems opportunities has also increased. The 2004 CNNF Forest Plan revision addressed the issue relative to miles of motorized trails that would be made available, as well as type of motorized uses allowed. The 2005 Travel Management Rule (TMR) expanded on and included additional requirements for motorized access to National Forest lands, resulting in a motorized vehicle use map (MVUM).

Although TMR addresses all types of motorized vehicles by generalized class, the Forest plan does not. Specifically a new class of off road vehicle has been developed and become quite popular in recent years. The vehicles are commonly referred to as utility terrain vehicles (UTVs).

Prior to 2009 the State of Wisconsin did not address UTVs by Statute, therefore their use was not allowed, other than for animal husbandry, or on private property. In 2009, the State of Wisconsin initiated a UTV pilot project, whereby UTVs would be allowed on specifically identified roads and trails within the State. The Forest has since made the decision to consider allowing UTV use on certain motorized Forest trails as well.

SITUATION

TMR requires mixed use analysis on roads where new mixed uses are introduced that deviate from current State law. In other words, a mixed use analysis is required when UTVs or ATVs (non-highway legal) are introduced on roads that allow highway legal vehicles. Although the requirement for mixed use analysis covers roads, it does not require the same consideration for expanded use or changes in use on Forest trail systems.

At this point one must consider FSH 2309.18 Chapter 10 – Trail Planning. Section 14.4 addresses “Designed Use”. Designed Use is the Managed Use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable Trail Class, determines which Design Parameters apply to a trail. Motorized trails on the CNNF currently have a designed use and managed use for ATVs. By introducing UTVs, the trail designed use and managed use would now become 4WD vehicle >50”. That is to say that UTVs are physically the largest vehicle allowed, therefore the new design vehicle for the trail.

In other words, design parameters for ATV managed use are different than design parameters for 4WD vehicle <50” (UTV). As a result the Forest should consider the results of safety audits/condition surveys of all motorized trails identified for consideration for UTV allowed use. The results identify trail segments that meet design parameters for the change in designed and managed use, as well as deficiencies. The results also provide recommendations for mitigation where deficiencies are identified; and ultimately the results provide decision makers with adequate information relative to trail geometry, in order to make an informed decision based on trail geometric adequacy and safety.

MANDATE FOR SAFETY

Based on FSH 2309.18 Chapter 10, the National Quality Standards for Trails apply to NFS trails and associated trail structures. Item number one under safety and security key measures is: Hazards do not exist

on or along the trail. This is a critical National Quality Standard, and goes on to state that “if it cannot be met, action must be taken as soon as practicable to correct or mitigate the problem”.

OBJECTIVE

As already discussed in describing the current situation, the objective of this exercise is to provide decision makers with adequate information relative to [design parameters and](#) safety, based on existing conditions. By providing results of field [design and](#) safety audits, recommendations for mitigation of geometrically deficient trail segments, and recommendations for designating use, decision makers will be able to make informed decisions about participation in the Wisconsin UTV pilot program (Act 175, 2009).

Assumptions

All motorized trails on the CNNF are currently trail class 3 or 4; and all motorized trails on the CNNF are single lane (two-way traffic allowed).

Note: The assumption that trails are single lane should make existing trail tread widths acceptable for single lane 4WD vehicles >50” design parameters for tread width. Double lane would require 16 feet tread width.

With the exception of specifically noted trails in the “Findings” section of this report, all motorized trails receive a high level of traffic volume on weekends between Memorial Day and Labor Day.

Measures

The important measure for determining the results of the objective are illustrated in the following table:

Table 1

DESIGN PARAMETERS (Measures) FOR FOUR-WHEEL DRIVE VEHICLES GREATER THAN 50 INCHES IN WIDTH

Design Parameters are technical guidelines for the survey, design, construction, maintenance, and assessment of National Forest System trails, based on their Designed Use and Trail Class and consistent with their management intent¹. Local deviations from any Design Parameter may be established based on trail-specific conditions, topography, or other factors, provided that the deviations are consistent with the general intent of the applicable Trail Class.

Designed Use FOUR-WHEEL DRIVE VEHICLE > 50"		Trail Class 3	Trail Class 4
Design Tread Width	Single Lane	72" – 96"	96" – 120"
	Double Lane	16'	16'
	Structures (Minimum Width)	96"	96"
Design Surface ²	Type	Native, with some on-site borrow or imported material where needed for stabilization and occasional grading Intermittently rough Sections of soft or unstable tread on grades < 5% may be present	Native, with imported materials for tread stabilization likely and routine grading Minor roughness Sections of soft tread uncommon

Designed Use FOUR-WHEEL DRIVE VEHICLE > 50"		Trail Class 3	Trail Class 4
	Protrusions	≤ 8" May be common and continuous	≤ 4" May be common and continuous
	Obstacles (Maximum Height)	24" Common and left for increased challenge	12" Uncommon
Design Grade²	Target Grade	5% – 18%	5% – 12%
	Short Pitch Maximum	20%	15%
	Maximum Pitch Density	10% – 20% of trail	5% – 10% of trail
Design Cross Slope	Target Cross Slope	5% – 12%	5% – 8%
	Maximum Cross Slope	12%	8%
Design Clearing	Height	6' – 8'	8' – 10'
	Width	72" – 96"	96" - 144"
	Shoulder Clearance	6" – 12"	12" – 18"
Design Turn	Radius	15' – 20'	20' – 30'

¹ For definitions of Design Parameter attributes (e.g., Design Tread Width and Short Pitch Maximum), see FSH 2309.18, section 05.

² The determination of the trail-specific Design Grade, Design Surface, and other Design Parameters should be based upon soils, hydrological conditions, use levels, erosion potential, and other factors contributing to surface stability and overall sustainability of the trail.

Methodology

The methodologies employed in determining the existing measures and whether they comply with design parameters listed in Table 1 are:

- **Tread Width** - measures average tread width along random segments of trail; in the event tread width changes noticeably, additional measurements were taken to reflect changes; measures minimum tread width at all trail structures (bridges and culverts).
Measures: See Table 1, page 6
- **Design Surface;** design surfaces are expressed in terms of surface type, protrusions, and obstacles.
Measures: See Table 1, page 6
- **Design Grade;** measures design grades in terms of target grade, short pitch, maximum grade, and or maximum pitch density.
Measures: See Table 1, page 7
- **Design Cross Slope;** measures design cross slope, if any, in terms of target cross slope and maximum cross slope.
Measures: See Table 1, page 7

- **Design Clearing;** measures design clearing in terms of width, estimated height, and shoulder clearance.
Measures: See Table 1, page 7
- **Design Turns;** measures curves in terms of turn radius where based on site investigation radius is noticeably small (use judgment in combination with site distance)
Measures: See Table 1, page 7
- **Crash History;** research of documented crash history and observation for evidence of crash sites during field review.
- **Traffic Volume;** existing traffic volume data, if available, combined with generalized estimates based on field observations.
- **Report;** report all findings as well as recommendation for designation of use; report all deficiencies; report options for mitigation of deficiencies.

Each of the design parameters listed in Table 1, and described in this section was incorporated in a GPS data dictionary which was then used to collect field data. Deficiencies as well as trail conditions were collected as electronic point file features or line features with associative attribute information. All data collected in the field was then transferred to GIS and used to determine a generalized ranking or rating for each trail segment. Additionally, the data was used to identify specific mitigation required at deficient locations along each trail.

Generalized ranking for individual trail segments was ultimately determined based on the number of deficiencies, the interrelation between deficiencies, and professional judgment. In other words a single set of deficiencies such as sight distance may have been given less weight on a segment of trail with a wide tread width, versus sight distance deficiencies on a segment of trail with narrow tread width.

Ultimately maps were created displaying the trail system in a color coded pattern that distinguishes between three general categories. Individual categories are: High – trail segments with evidence or documentation of crash sites, a high number of identified deficiencies, or a combination of both; Moderate – trail segments where a moderate level of deficiencies have been identified; and Low – few if any deficiencies identified, and suitable for UTV.

FINDINGS (RECOMMENDATIONS)

General Findings and Recommendations

Generally, findings relative to geometric and safety deficiencies have been attributed to a lack of horizontal sight distance, lack of vertical sight distance, narrow tread width, and/or narrow clearing limits. Individually and collectively, deficiencies have resulted in the following findings and recommendations. Photographic examples of typical deficiencies [examples](#) are provided throughout the report and in Appendix C. [Examples of trail segments meeting or exceeding design parameters have also been included.](#)

[It should also be noted that estimated safe and prudent speed was identified during field assessments. Observed speeds of ATVs traveling on different segments of trail ranged greatly, as well as with different level of experience with users. During field review a number of ATV and motorcycle users were encountered on the trails, all of whom were traveling at a moderate or high rate of speed. In general, observed user speeds exceeded safe and prudent speeds identified by the author.](#)

Forest Trail 283 – State Trail Connector

Forest Trail 283 begins at the south forest boundary, and [terminates](#) at the [junction with the](#) Tuscobia State Trail. This trail is a connector between a Flambeau River State Forest motorized trail and the Tuscobia State trail which [are both](#) open to motorized vehicles, including UTVs. Based on a generalized rating or ranking system, the trail has been ranked low for mitigation, with one short segment ranked moderate (see Figure A-1, Appendix A; Figure B-1, Appendix B).

Although trail specific use data (traffic count) is not available, the trail appears to receive a moderate to high level of ATV traffic. This determination was made based observations that showed well worn tread with no vegetation within the travelway. The entire trail length traverses old log road locations. The result is generally adequate tread-width and clearing limits for ATVs as well as UTVs. Trail surface is a combination of native sandy loam and pit-run aggregate. Tread-width varies from a minimum 6 feet on one short segment to 16 feet. Clearing limits vary from 16 feet to 22 feet. Although the tread-width varies due to sod layer encroachment, the original tread-width averages 12 feet.

With the exception of two short segments the entire length of trail is adequate for use by UTVs. Widening clearing limits on one curve and increasing tread-width one short segment would mitigate limited site distance, and allow passage of vehicles traveling in opposite directions along the entire length of trail.

Recommendation: Allow [for and designate](#) UTVs

Forest Trail 214, 214A, 214B, 214C, 214D – Dead Horse Trail

Forest Trail (FT) 214 (Dead Horse Trail) covers a large portion of the Great Divide Ranger District. With a southern termini beginning at the junction with Tuscobia State Trail, the Dead Horse trail continues north, ending in a large loop that extends well north of Wisconsin State Highway 77. Four individual connecting trail spurs complete the Dead Horse trail system; FT 214A connects the main trail system with Camp Loretta trail head near Ashland County Highway GG; FT 214B connects the main trail system with FR 601 and the small community of Cayuga; FT 214C connects the main trail system with the community of Clam Lake; and FT 214D connects the main trail system to the [Grass Road](#) trail head. Based on a generalized rating or ranking system, the trail has been rated from low to high. Based on a wide array of trail conditions, generalized rankings change often throughout the trail system (see Figure A-1, Appendix A).

As with FT 283 specific use data is not available, but based on observations the trail system receives a moderate to high level of ATV traffic. As with FT 283 this determination was made based observations that showed well worn tread with no vegetation within the travelway. The Dead Horse trail and connectors was originally created as part of an extensive snowmobile trail network comprised of a series of terminal or dead end low volume logging roads. Each logging road was then connected by newly constructed trail corridors or connector segments. Typically trail segments following existing logging roads have wider tread widths and clearing widths, as opposed to constructed trail connecting corridors that tend to be narrower, both in tread width and clearing width. Trail surface varies widely from native hydric silt loams, to crushed aggregates. Tread width varies from a minimum 5 feet to more than 30 feet where large mud holes are encountered. Clearing limits range from 8 feet to 36 feet. Unlike FT 283, actual maximum tread widths of 5 feet were observed.

Trail conditions vary considerably and range from high standard (exceeding class 4 design parameters) aggregate surfaced segments to near impassable, narrow, highly erodible native surface segments. The result as already stated and evidenced by reviewing map A-1 in Appendix A is that rating or rankings for the trail system change often.

In order to mitigate deficiencies that would reduce segment ratings to low throughout the Dead Horse trail system, varying levels of maintenance would be needed as well as reconstruction on certain trail segments. More detailed site specific information is provided in the Site Specific Findings and Recommendations, and Mitigation sections of this report.

Recommendation: Based on existing condition it would appear that some segments of the Dead Horse trail system would be geometrically adequate for immediate UTV designation. An inherent problem with that approach is that UTVs would be limited to specific stretches of trail that offer no real destination. In other words, users would be restricted to traveling back and forth along individual segments. An assumption could also be made that if isolated segments were open to and designated for UTV use, that users would ignore restriction to UTVs elsewhere and create law enforcement issues. Therefore the recommendation at this time is to not designate the Dead Horse trail system and connectors, until prioritized mitigation can occur that would result in destination to destination segments that meet or exceed all geometric design parameters for the managed vehicle (UTV).

Forest Trail 421, 405 – Chippewa Flowage, Moose Lake, Blaisdell Lake Connector

Forest Trail 421 begins near the south Forest Boundary on Forest Road (FR) 319. A snowmobile trail continues to the southwest from this intersection, but does not appear to be open to ATVs or UTVs. Sawyer County ATV/ORV maps do not show this trail which connects FT 421 to the Chippewa Flowage area. Heading in a northerly direction FT 421 intersects with FT 405 near FR 164, continuing in an easterly direction, eventually intersecting with resort access trails near Moose Lake in the Town of Round Lake. From this point FT 421 continues south and east eventually terminating at Swietzer Road in the Town of Draper. From this point a number of local roads are designated as ATV/UTV routes connecting the trail system with resorts in the Baisdell Lake, Chippewa River area, and ultimately the Tuscobia State trail (see Figure A-2, Appendix A).

FT 405 Begins at the intersection with FT 421 near FR 164, and terminates 1.6 miles to the northwest at the intersection with FR 320. FR 320 is not designated for ATVs or UTVs.

Once again specific use data is not available. Based on field observations the trail system receives a low to moderate level of ATV traffic. As with FT 283 and the Dead Horse trail system, this determination was made based observations that showed a range from grassed over and fully vegetated, to moderate and well worn tread with no vegetation in the travelway. Trail surface varies widely from native hydric sandy loams and silt loams, to crushed aggregates. Tread width varies from a minimum 7 feet to more than 12 feet. Clearing limits range from 12 feet to 22 feet.

As with the Dead Horse system, trail conditions vary considerably and range from high standard (exceeding class 4 design parameters) aggregate surfaced segments to near impassable native surface segments west of Sawyer County Highway S.

In order to mitigate deficiencies that would reduce segment ratings to low throughout the FT 421 and FT 405 system, varying levels of maintenance would be needed as well as reconstruction on certain trail segments. More detailed site specific information is provided in the Site Specific Findings and Recommendations, and Mitigation sections of this report.

Recommendation: Based on existing condition it would appear that some segments of the FT 421 and FT 405 system would be geometrically adequate for immediate UTV designation. As was similarly discussed with the Dead Horse system, an inherent problem with that approach is that UTVs would be limited to specific stretches of trail that offer no real destination. In other words, users would be restricted to traveling back and forth along individual segments. An assumption could also be made that if isolated segments were open to and designated for UTV use, that users would ignore restriction to UTVs elsewhere and create law enforcement issues. Therefore the recommendation at this time is to not designate the FT 421 and FT 405 trail system, until prioritized mitigation can occur that would result in destination to destination segments that meet or exceed all geometric design parameters for the managed vehicle (UTV).

Site Specific Findings (by Trail Segment)

Site specific findings and recommendations in this section of the report discuss existing conditions based on specifically identified trail segments. This allows for a better description of the range of deficiencies encountered, as well as recommendations for mitigation.

Forest Trail 283 – Forest Boundary to Tuscobia State Trail

Due to FT 283 being less than one mile in length, refer to general findings on pages 8 and 9 for trail specific information, as well as recommendations.

Forest Trail 214, 214A, 214B, 214C, 214D – Dead Horse Trail

FT 214 (DH11 – DH10)

DH11 is a map reference point that coincides with the south termini of FT 214 where it intersects with the Tuscobia State Trail. DH 10 is also a map reference point and coincides with the intersection of FT 214 and FR 161. DH11 to DH10 trail segment is approximately 3.9 miles in length (see Figure B-2, Appendix B).

Beginning at the intersection with Tuscobia, part of the trail appears to have originally been constructed as a 0.3 mile (approximate) connector between the Tuscobia and FR 1973. Trail segment surface is native silt loam (Butternut), has a variable in tread width from 6 feet to more than 16 feet, and clearing limits that range from 12 to 28 feet. Moderate to severe erosion has created a deep narrow troughed trail tread on the southern portions that not only limit vehicle passage, but prevents opposing vehicle passage at all. Sight distance on curves in the troughed section is limited as well.

At approximately mile post (MP 0.3) the trail segment begins to run coincident with FR 1973 and continues in that manner up to the intersection with FR 161 (DH10). This 3.6 mile segment is located on an old railroad grade and has pit run aggregate surfacing that has failed at a number of locations. Tread width averages 8 feet. Clearing limits vary from 8 feet to 16 feet.



At MP 0.94 the trail passes through a short wetland crossing approximately 75 feet in length. The trail/road bed has failed resulting in a narrow water filled trough less than 5 feet wide and 3 feet deep (photo). Users have created a detour adjacent to the marked trail that is also troughed and impassable. Due to the width of ATV's, passage is possible with 4 wheel drive ATV. UTV's on the other hand would likely not be able to navigate through this short section due to the well defined deep narrow troughs. The remainder of the trail segment has little variation in vertical and horizontal alignment.

Overall the trail has been ranked high for mitigation on the southernmost 0.3 miles, and for a 0.2 miles stretch beginning at MP 0.92. The remainder of the trail has been ranked moderate due to the impassable segment described combined with planned relocation.

FT 214 (DH10 – DH1)

DH10 to DH1 trail segment begins at the intersection with FR 161 and ends at the intersection with FT 214A. The trail segment is approximately 4.25 miles in length (see Figure B-3, Appendix B). Trail tread widths vary

from 6 feet to more than 10 feet. Clearing limits vary from 16 feet to more than 20 feet. Surface ranges from hydric native silt loam (Torch) to crushed aggregate.

Beginning at the intersection with FR 161 the trail follows an old abandoned railroad grade to MP 0.21. Although this segment meets design parameters, the trail traverses native hydric soils resulting in near impassable mud holes. Users created detours are evident at these locations that would not allow for passage of UTV's given the narrow routes between trees adjacent to the trail.

From MP 0.21 the trail veers west and immediately enters a 0.16 miles stretch where the trail becomes impassable due primarily to trail location through native silt loam (Butternut). As a result of evidenced and observed high use on this segment, the trail is severely troughed within the clearing limits. The troughs hold water on a continual basis and have large cobble and small boulders scattered throughout. As a result, numerous user created detours run adjacent to the trail through this area and were observed over 100 feet from the marked trail. As user created detours become impassable, users move further from the marked trail creating detours to the detours. The result is an impassable marked trail, impassable user created detours, and additional user created detours that will not physically accommodate passage of UTV's due to narrow openings between trees. It should also be noted that ATV parts were found scattered along this trail segment. In the author's opinion, these parts are the result of impacts with submerged large cobble and boulders rather than from vehicle crashes associated with sight distance or loss of control due to speed.

At MP 0.37 the trail condition improves slightly to the point where users have only created detours to three short impassable segments. With the exception of the three additional user created detours, this 0.52 mile trail segment meets minimum design parameters for UTV's. The entire preceding trail segment (DH10 – MP 0.89) has been ranked high for mitigation due to the numerous impassable segments already discussed.

At MP 0.89 the trail intersects with FR 162. From this point the trail continues west for approximately 0.28 miles, where it then turns north and runs coincident with FR 311A which is a closed ML 1 road. Surface continues as native silt loam (Butternut) with a high concentration of cobble that contributes to a stable tread. Tread width and clearing limits are adequate and meet or exceed requirements for UTV as the managed vehicle.

At MP 1.17 the trail runs coincidently with FR 311A up to MP 2.36. This segment has an average tread width of 10 feet and average clearing limits exceeding 20 feet. Surface is pit run aggregate. Although the trail meets minimum design standards for UTV as the managed vehicle, six locations have been identified where recommendations are to increase clearing due to vegetation encroachment that limits sight distance on horizontal curves.

At MP 2.36 the trail leaves the north termini of FR 311A and once again traverses native silt loam soils (Butternut). Tread width narrows considerably to 6 feet. Clearing limits also narrow to an average of 16 feet. This native segment of trail exhibits more severe troughed trail tread as well as user created detours. During dry conditions the marked trail may be passable, negating the need for user developed detour use. Although the existing condition meets minimum standards for UTV's, a recommendation has been made to reconstruct from MP 2.36 to MP 2.65.

At MP 2.65 the trail condition improves considerably due to recent reconstruction. Tread width averages 10 feet while clearing limits remain at an average of 16 feet. Surface is raised aggregate. Trail conditions remain generally uniform up to MP 4.25 (DH1). As with the previously described segment, the existing trail condition meets minimum design standards for UTV's as the managed vehicle, with the exception of limited sight distance on 8 horizontal curves.

Overall this trail segment (DH10 – DH1) has been ranked high for mitigation on the first 0.89 miles. From MP 0.89 to MP 2.36 mitigation ranking is low. The remainder of the trail has been ranked moderate due to the number of instances where horizontal sight distance is limited.

FT 214A (Camp Loretta Trailhead - DH1)

FT 214A begins at the Camp Loretta trailhead near Sawyer County Highway S, and ends at the intersection with FT 214 (DH1). This trail is approximately 7.6 miles in length (see Figure B-4, Appendix B). Trail tread widths vary from 5 feet to 12 feet. Clearing limits vary from 12 feet to more than 28 feet. Surface ranges from hydric native sandy loam (Au Gres, Peeksville) to crushed aggregates.

Beginning at the Camp Loretta trailhead and heading north and east the trail immediately enters an area of hydric soils. A large impassable sink hole has developed within the native tread surface. A user developed detour, as well as an alternate route (FR621) are available. This segment is ranked moderate and meets minimum design standards, with the exception of being impassable.

At MP 0.17 the trail crosses FR 621 and continues north and east to the intersection with Sawyer CTY GG. Tread width varies from 5 feet to 7 feet. Clearing limits vary from 10 feet with additional conifer limb encroachment to 20 feet. Tread surface is native. Tread width and clearing should be increased in order to allow for passage of two way traffic along this trail segment. As a result this segment has been ranked high for deficiency mitigation.

At MP 0.68 the trail crosses Sawyer CTY GG and continues to the northeast. Tread width varies from 7 feet to 20 feet. Clearing limits vary from 20 feet to 22 feet. Tread surface is native fine sandy loam (Shanagolden). Although the trail exhibits some impacts due to soil conditions, design standards meet or exceed the minimum requirements for UTV up to MP 0.83 resulting in a low mitigation ranking.

From MP 0.83 to MP 1.52 trail tread width varies from less than 6 feet to 16 feet. Clearing limits vary from 16 feet to 28 feet. Surface is native sandy loam and fine sandy loam (Padus-Karlin, Shanagolden). This trail segment has been ranked moderate due to the need for increased tread width on more than 10% of the segment.

From MP 1.52 to MP 2.16 trail tread varies from 7 feet to 12 feet. Clearing limits vary from 12 feet to 22 feet. Surface is native fine sandy loam (Shanagolden). Although this trail segment exhibits defects due to water/soil interaction, existing conditions meet or exceed design standards for UTV's. As a result this segment of trail has been ranked low for design mitigation.

From MP 2.16 to MP 2.3 trail tread width averages 6 feet. Clearing limits average 16 feet. Surface is native hydric fine sandy loam (Peeksville). Although average tread width meets minimum standards for UTV as the managed vehicle, it is recommended that tread width be increased based on existing condition (horizontal alignment combined with narrow tread) in order to provide a tread width that exceeds 6 feet throughout this segment. Therefore this segment has been ranked moderate for design mitigation.

From MP 2.3 to MP 4.39 the trail runs coincident with old logging roads and an abandoned railroad grade (photo at right). Although measured rail tread width varies from 7 feet to 8 feet based on sod layer, actual historic tread width averages 10 to 12 feet. Clearing limits vary from 16 feet to 22 feet. Surface is pit run aggregate. Due to the coincident location with old logging roads and railroad grade, horizontal and vertical alignment, this trail segment meets or exceeds minimum design standards for UTV and is ranked low for design mitigation.

From MP 4.39 to MP 4.91 the trail continues to run coincident with old logging roads. Tread width and clearing limits are similar to the previous segment. Surface



is a combination of native silt loam (Butternut) and aggregate. Unlike the previous trail segment horizontal alignment creates very limited sight distance on curves. Therefore this segment has been ranked moderate for design standard mitigation.

From MP 4.91 to MP 6.51 the trail continues to run coincident with old logging roads. Tread width and clearing limits are similar to the previous segments. Surface is a combination of native silt loam (Butternut), sandy loam (Padus-Karlin) and aggregate. This trail segment meets or exceeds minimum design standards for UTV and is ranked low for design mitigation.

At MP 6.51 the trail begins a 0.1 mile segment where curves severely limit sight distance due to horizontal alignment. This short segment has been ranked moderate for design mitigation.

From MP 6.61 to MP 7.62 (DH 1) trail tread width averages 8 feet. Clearing limits average 16 feet. Surface is a combination of native sandy loam (Padus-Karlin), silt loam (Shanagolden), and aggregate. With the exception of one location where corner clearing has been recommended, the entire segment meets design standards for UTV.

FT 214 (DH1 – DH2)

DH1 to DH2 trail segment begins at the intersection with FT 214A and ends at the intersection with FT 214D. The trail segment is approximately 4.1 miles in length (see Figure B-5, Appendix B). Trail tread widths vary from less than 8 feet to 14 feet. Clearing limits vary from 12 feet to 28 feet. Surface ranges from fine sandy loam (Shanagolden) to crushed aggregate.

Beginning at the intersection with FT 214A and heading in a northerly direction, the trail has a tread width averaging 8 feet wide. Clearing limits range from 12 to 16 feet. Surface is native fine sandy loam (Shanagolden). At MP 0.14 the trail segment intersects with FR 163. Due to encroachment by conifers on curves that reduce sight distance, this trail segment has been ranked moderate for design standard mitigation.

From MP 0.14 to MP 0.73 the trail has an average tread width of 8 feet with clearing limits that average 16 to 20 feet. Surface varies from native sandy loam (Padus-Karlin) to concrete with aggregate. One curve has limited sight distance on this segment, but meets minimum curve design standards without mitigation. Sight distance is also limited at MP 0.47 due to a very small radius vertical curve. Recommendation has been made to mitigate at this location. Due to the overall condition of this segment, as well as the fact that design parameters are met for the managed vehicle, it has been ranked low.

From MP 0.73 to MP 0.78 the trail runs coincident with FR 162 (ML 4) where it crosses the East Fork Chippewa River.

From MP 0.78 to MP 3.39 the trail has a tread width 14 feet wide. Clearing limits average 20 to 22 feet. Surface is aggregate. This trail segment was relocated and reconstructed in 2008 (photo). Although there are nine instances where corner clearing have been identified and recommended, the wide tread width allows for an added level of safety when oncoming vehicles are encountered, therefore this trail segment has been ranked low for mitigation, and meets standards for UTV.



FT 214D (DH2 – Grass Road Trailhead)

FT 214D begins at the intersection with FT 214 at DH2, and terminates at Grass Road trailhead (see B-6, Appendix B). Tread width varies from 8 to 12 feet. Clearing limits vary from 14 to 16 feet. Surface is pit run aggregate. 0.83 miles of the 1.36 mile long trail is open to mixed use where it runs coincident with FR 1252. With the exception of brushing that is needed, the straight level layout of the route corridor results in a low ranking for mitigation and would be suitable for UTV designation.

FT 214 (DH2 – DH3)

DH 2 to DH 3 trail segment begins at the intersection with FT 214D and ends at the Hungry Run Creek crossing on FR 166. The trail segment is approximately 4.2 miles in length (see Figure B-7, Appendix B). Tread width varies from 8 to 11 feet. Clearing limits vary from 14 to 20 feet. Surface varies from native silt loam (Minocqua-Wozny-Pleine) to crushed aggregate.

From DH 2 to the intersection with FR 162 (MP 0.42) the trail runs coincident with a ML 1, closed road (FR 1252B). Tread width and clearing limits consistently exceed design standards for UTV. One instance of corner clearing has been recommended, but is not considered critical to trail standard. The result is that this trail segment has been ranked low for mitigation and would be suitable for UTV.

From MP 0.42 to MP 0.74 trail tread width averages 8 to 10 feet. Clearing limits average 16 feet. Surface is a good mix pit run aggregate. This segment of trail has 6 instances where horizontal and vertical curves create sight distance less than 50 feet. Trail surface condition is such that increased vehicle speeds are likely to occur on this segment. At MP 0.67 a crash site was documented (see photo). A low radius horizontal and vertical curve at this location in combination with a large white pine immediately adjacent to the trail creates the hazard. A recommendation for mitigation at this location involves increasing the vertical and horizontal curve radii. Ranking for mitigation at and adjacent to the crash site is high. Clearing to improve site distance on 5 additional curves has resulted in a moderate ranking for the remainder of this trail segment.



From MP 0.74 to MP 1.19 all but 0.07 miles runs coincident with FR 271 (ML 1). Tread width averages 10 feet with clearing averaging 16 feet. Due to the straight level alignment of this segment mitigation ranking is low. This segment would be suitable for UTV.

From MP 1.19 to MP 1.46 trail tread width averages 8 feet. Clearing limits vary from 8 to 16 feet. Surface is pit run aggregate. Although trail conditions meet or exceed minimum design standards, limited site distance combined with reduced clearing limits on curves result in a moderate mitigation ranking for this segment.

From MP 1.46 to the intersection with FR 164 at MP 1.86 trail tread width averages 8 feet. Clearing limits average 12 to 16 feet. Surface remains pit run aggregate. Horizontal and vertical alignment of this segment allow for adequate site distance throughout, resulting in a low ranking for mitigation. This segment would be suitable for UTV.

From MP 1.86 at the intersection with FR 164 to MP 2.01 at the intersection with FR 166 tread width varies from 6 to 11 feet. Clearing limits vary from 12 to 15 feet. Surface varies from pit run aggregate to native fine

sandy loam (Peeksville). This segment has been ranked moderate for mitigation due to the combination of narrow tread width and limited sight distance on curves.

From MP 2.01 at the intersection with FR 166 to MP 3.18 tread width varies from 8 to 16 feet. Clearing limits vary from 16 to 20 feet. Surface varies from pit run aggregate to native fine sandy loam (Shanagolden). One curve has limited sight distance on this segment, but meets minimum curve design standards without mitigation. Recommendation has been made to mitigate at this location. Due to the overall condition of this segment, as well as the fact that design parameters are met for the managed vehicle, it has been ranked low.

From MP 3.18 to MP 4.11 tread width averages 8 feet. Clearing limits average 14 feet. Surface is predominantly pit run aggregate. Five instances of limited sight distance on horizontal curves have been identified with mitigation recommended. Due to very good trail tread condition vehicle speeds are likely to be higher on this segment than on unsurfaced rough trail segments. As a result this segment has been ranked moderate for mitigation to improve sight distance on curves.

From MP 4.11 to DH 3 at Hungry Run Creek crossing, the trail runs coincident with FR 166 (ML 4).

FT 214 (DH3 – DH4)

DH 3 to DH 4 trail segment begins at the Hungry Run Creek crossing and ends at the intersection with FR 338. The trail segment is approximately 4.13 miles in length (see Figure B-8, Appendix B). Tread width varies from 8 to 12 feet. Clearing limits vary from 16 to 36 feet. Surface is predominantly pit run and crushed aggregate excepting a 0.17 mile segment that is native sandy loam (Padus).

From DH 3 to MP 0.03 the trail segment runs coincident with FR 166 (ML4).

From MP 0.03 to MP 0.68 the trail runs coincident with a ML 2 road (FR 166B). Tread width averages 10 feet wide. Clearing limits varies from 12 feet to 20 feet. Surface is pit run aggregate. As a result of recent reconstruction, that did not re-establish previous clearing limits, sight distance is limited on six horizontal curves (photo). Due primarily to a very good running surface, the author observed ATV traffic on this segment traveling at speeds that exceed what is considered safe and prudent. As a result this segment has been ranked moderate for mitigating sight distance limitations on horizontal curves.



From MP 0.68 to MP 3.79 the trail runs coincident with 2 ML 1 roads (325B, 325BA), and a ML 2 road (325). Tread width varies from 9 feet to 12 feet. Clearing limits vary from 16 feet to 36 feet. Surface is a combination of pit run and crushed aggregate. Although corner or curve clearing has been recommended at four locations on this segment, tread width and curve radius is sufficient to allow for passage of oncoming traffic that may be encountered. Therefore this segment has been ranked low for mitigation and would be suitable for UTV use.

From MP 3.79 to MP 3.96 tread width varies from 6 feet to 8 feet. Clearing limits vary from 8 feet to 16 feet. Surface is native sandy loam (Padus). Although this segment meets minimum design standards, existing clearing limits would not allow passage of oncoming vehicles without difficulty. Therefore this segment has been ranked moderate for mitigation that would involve brushing to increase clearing limits.

From MP 3.96 to DH 4 tread width averages 8 feet. Clearing limits average 16 feet. Surface is aggregate. This segment has been ranked low for mitigation and would be suitable for UTV designation.

FT 214 (DH4 – DH5)

DH 4 to DH 5 tail segment begins at the intersection with FR 338 and ends at the intersection with FT 214 south loop intersection. This trail segment is 3.88 miles in length (see Figure B-9, Appendix B). Tread width varies from 7 feet to 12 feet. Clearing limits vary from 14 feet to 28 feet. Surface varies from pit run aggregate to fine sandy loam (Shanagolden).

From DH 4 to MP 0.07 tread width averages 10 feet wide. Clearing limits average 15 feet. Surface varies from native loamy sand (Sayner-Pence-Vilas) to pit run aggregate. This segment has no recommendations for mitigation, meets or exceeds minimum design standards, and would be suitable for UTV designation.

From MP 0.07 to MP 0.17 tread width continues to average 10 feet. Clearing limits vary from 12 to 15 feet. Surface is native sandy loam (Sayner-Pence-Vilas). Two horizontal curves on this short segment have vegetation encroachment to the tread-way. As a result a recommendation for mitigation has been made resulting in a moderate ranking on this segment.

From MP 0.17 to MP 0.45 tread width averages 8 feet wide. Clearing limits average 16 feet. Surface varies from pit run aggregate to fine sandy loam (Shanagolden). No deficiencies have been identified for this trail segment. As a result ranking for mitigation is low. This segment would be suitable for UTV designation (photo).



From MP 0.45 to MP 1.05 tread width varies from 7 feet to 10 feet. Clearing limits vary from 12 feet to 20 feet. Surface is predominantly native sandy loam (Padus) with some pit run aggregate. Due to the variation in tread width combined with eight instances of limited sight distance on horizontal curves, and continuously winding horizontal alignment, this segment has been ranked high for mitigation.

From MP 1.05 to MP 1.67 tread width averages 10 feet wide. Clearing limits average 16 feet. Surface is varies from native fine sandy loam (Shanagolden) to native sandy loam (Padus). Although this segment has one recommendation for sight distance mitigation, tread width at the same location provides for adequate width to provide for vehicle passage. Therefore this segment has been ranked low for mitigation. This segment also meets or exceeds all design standards and would be suitable for UTV designation.

From MP 1.67 to MP 1.71 the trail runs coincident with FR 168 (ML 4) where it crosses the Moose River.

From MP 1.71 to MP 2.02 tread width varies from 7 feet to 9 feet. Clearing limits vary from 9 feet to 12 feet. Surface varies from hydric sandy loam (Wormet) to sandy loam (Keweenaw-Pence). This entire segment could benefit from brushing to increase clearing and sight distance. Because of the limited clearing in a predominantly coniferous setting and a narrow tread width mitigation ranking for this segment is moderate.

From MP 2.02 to MP 2.82 tread width averages 7 feet wide. Clearing limits average 16 feet. Surface is native sandy loam (Padus-Karlin). There are fourteen locations on this segment where vertical and horizontal curves have limited sight distance. Due to the narrow tread width, fourteen instances of limited sight distance on horizontal and vertical curves, and continuously winding horizontal and vertical alignment, this segment has been ranked high for mitigation.

From MP 2.82 to MP 3.3 tread width averages 7 feet wide. Clearing limits vary from 10 feet to 14 feet. Surface is native sandy loam (Keweenaw-Pence, Padus-Karlin). Although there is only one instance where sight distance has been identified for mitigation on this segment, vegetative encroachment creates a narrow corridor that does not allow for ease in passage with oncoming vehicles. The result is a moderate ranking for mitigation.

From MP 3.3 to MP 3.38 the trail runs coincident with a ML 2 road (FR 170B). Tread width is 12 feet. Clearing limits vary from 22 feet to 28 feet. Surface is pit run aggregate. This segment is ranked low for mitigation and would be suitable for UTV designation.

From MP 3.38 to MP 3.82 tread width varies from 6 feet to 12 feet. Clearing limits vary from 11 feet to 16 feet. Surface is sandy loam (Keweenaw-Pence, Stanberry) and loamy fine sand (Karlin). Although this segment meets minimum design standards, clearing and tread width vary enough that passage with oncoming vehicles would be difficult at numerous locations. The result is a moderate ranking for mitigation.

From MP 3.82 to DH 5 at MP 3.88 tread width varies from 6 feet to 12 feet. Clearing limits vary from 11 to 16 feet. Surface is native loamy fine sand (Karlin). During wet periods, this segment has an impassable segment that is bypassed by a user developed detour. The detour has less than 5 feet of clearance between trees that makes it physically impossible to accommodate a UTV (photo). The detour is also nearly impassable due to water and mud. The result is a high ranking for mitigation.



FT 214 (DH5 – DH6)

DH 5 to DH 6 tail segment begins at the intersection with FT 214 south loop intersection and ends at the Dead Horse Slough trailhead adjacent to Wisconsin HWY 77. This trail segment is 7.88 miles in length (see Figure B-10, Appendix B). Tread width varies from 5 feet to 12 feet. Clearing limits vary from 6 feet to 28 feet. Surface varies from aggregate to sandy loam (Stanberry).

From the DH 5 at the FT 214 south loop intersection to MP 0.15 tread width averages 8 feet wide. Clearing limits average 16 feet. Surface is native sandy loam (Padus). One very small radius curve severely limits sight distance on this short segment resulting in a moderate ranking for mitigation.

From MP 0.15 to MP 1.64 tread width varies from 8 feet to 12 feet. Clearing limits vary from 16 feet to 28 feet. Surface is aggregate. One location was identified where sight distance is limited on this trail segment. Tread width is sufficient at this location to allow passage of vehicles. Overall this segment is a good example of trail that exceeds design standards for UTV. The result is a low ranking for mitigation.

From MP 1.64 to MP 1.96 tread width averages 8 feet wide. Clearing limits average 16 feet. Surface is 4 inch minus gradation aggregate. This trail segment has ten locations where sight distance is severely limited due to horizontal and vertical trail alignment. A combination of clearing and earthwork would be required to improve sight distance. The result is a high ranking for mitigation on this segment.

From MP 1.96 to MP 2.09 FT 214 runs coincident with FR 335 (ML 4) at the East torch River crossing.

From MP 2.09 to MP 2.56 tread width varies from 5 feet to 8 feet. Clearing limits vary from 6 feet to 16 feet. Surface is native sandy loam (Padus). This segment is extremely narrow to the point where ATV's cannot pass one another in places. Brushing and increased tread width is recommended for the entire segment. The result is a moderate ranking for mitigation.

From MP 2.56 to MP 2.66 tread width averages 8 feet. Clearing limits average 16 feet. Surface is native sandy loam (Keweenaw-Pence). This segment has a good horizontal and vertical alignment that allows for passage as well as adequate sight distance on curves. The result is a low ranking for mitigation and would be suitable for UTV.

From MP 2.66 to MP 2.8 tread width varies from 5 feet to 8 feet. Clearing limits vary from 9 feet to 16 feet. Surface is native sandy loam (Padus). This trail segment has limited sight distance throughout all curves (photo at right). The narrow tread width also limits the passage with oncoming vehicles. The result is a high ranking for mitigation that would require brushing throughout as well as increased tread width.



From MP 2.8 to MP 3.17 tread width averages 10 feet. Clearing averages 16 feet. Surface is native sandy loam (Padus). No recommendations for mitigation have been made on this segment and existing conditions meet or exceed design standards. Therefore this trail segment would be suitable for UTV.

From MP 3.15 to MP 3.25 tread width narrows to 6 feet. Clearing limits are 10 feet. Surface continues to be native sandy loam (Padus). Sight distance is severely limited on one horizontal curve. The result is a moderate ranking for this segment.

From MP 3.25 to MP 4.28 tread width averages 8 feet. Clearing limits vary from 12 to 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Peeksville). Although clearing limits occasionally narrow from those stated, vertical and horizontal alignment on this segment does not inhibit sight distance. The result is a low ranking for mitigation.

From MP 4.28 to MP 4.33 tread width narrows to 5 feet. Clearing limits average 10 feet. One blind curve is located on this short segment resulting in a moderate ranking for mitigation.

From MP 4.33 to MP 5.18 tread width averages 8 feet. Clearing limits average 14 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). The entire length of this trail segment runs coincident with ML 1 and ML 2 roads. All conditions meet minimum design standards resulting in a low ranking for mitigation.

From MP 5.18 to MP 5.21 tread width remains 8 feet wide. Clearing limits are 14 feet. Surface is native loamy fine sand (Karlin). A very small radius vertical curve on this segment limits sight distance. A recommendation for earthwork has resulted in a moderate ranking for mitigation.

From MP 5.21 to DH 6 at MP 7.88 the trail runs coincident with ML 1 and ML 2 roads. This segment also includes a 14 foot wide trail bridge crossing on the West Torch River. Tread width varies from 8 to 12 feet. Clearing limits average 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Annalake). Although this segment has several short segments where tread width and clearing limits appear narrow, occurrence is on stretches where horizontal and vertical alignment are adequate for sight distance. Brushing should take place as a maintenance item as opposed to mitigation. Therefore this segment has been ranked low for mitigation.

FT 214 (DH6 – DH7)

DH 6 to DH 7 trail segment begins at the Dead Horse Slough trailhead adjacent to Wisconsin HWY 77 and ends approximately 0.32 miles north of the intersection with FR 182. This trail segment is 4.7 miles in length (see Figure B-11, Appendix B). Tread width varies from 7 feet to 16 feet. Clearing limits vary from 16 feet to 28 feet. Surface varies from crushed aggregate to native sandy loam (Wormet).

From DH 6 to MP 0.28 the trail runs coincident with the original HWY 77 location (now abandoned). Although tread width appears to be 8 feet wide, the historic travelway is 20 feet wide. Clearing limits currently average

22 feet. Surface is a combination of old pavement and aggregate. Due to the coincident location this trail segment has been ranked low for mitigation.

From MP 0.28 to MP 0.62 tread width averages 9 feet. Clearing limits range from 16 to 22 feet. Surface is native sandy loam (Stanberry). Due to horizontal and vertical curves in a coniferous setting this segment has three locations where sight distance would need to be increased through mitigation. The result is a moderate ranking for mitigation.

From MP 0.62 to MP 2.32 tread width varies from 10 to 12 feet. Clearing limits vary from 16 feet to 30 feet. Surface is crushed aggregate. The first 0.08 miles of this segment are new trail location that meets minimum design standards. Regardless, two locations have been identified for increasing sight distance where the trail intersects with FR 346. From MP 0.08 to MP 2.32 the trail runs coincident with FR 346 (ML 2) and exceeds minimum design standards. This trail segment has been ranked low for mitigation and would be suitable for UTV designation.

From MP 2.32 to MP 2.97 tread width averages 8 feet. Clearing limits vary from 12 to 16 feet. Surface ranges from aggregate to native fine sandy loam (Shanagolden). Due to a variation in clearing limits combined with limited sight distance, this segment has been ranked moderate for mitigation.

From MP 2.97 to MP 3.63 tread width varies from 7 to 10 feet. Clearing limits vary from 12 to 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). Although portions of this segment are narrower than desired, the trail meets or exceeds design standards and has a straight level alignment. The result is a low ranking for mitigation.

From MP 3.63 to MP 3.71 tread width is 8 feet wide. Clearing limits are 16 feet. The trail has a horizontal alignment resulting in a small radius "S" curve with limited sight distance throughout the short segment. Recommendation has been made to increase clearing to improve sight distance, resulting in a moderate ranking for mitigation.

From MP 3.71 to MP 4.06 tread width averages 8 feet. Clearing limits average 18 feet. Surface is native fine sandy loam (Shanagolden). No deficiencies have been identified for this trail segment resulting in a low ranking for mitigation.

From MP 4.06 to 4.1 tread width is 8 feet. Clearing limits are 16 feet. Surface is smooth native sandy loam (Wormet). This 200 foot long segment comprises a very small radius "dogleg" in the trail with vegetation encroaching that limits sight distance throughout the segment. Trail surface condition provides evidence of increased speeds at this location. The result is a moderate ranking for mitigation to remove vegetation adjacent to the tread-way.

From MP 4.1 to MP 4.7 at DH 7 the trail runs coincident with ML 1 system roads (photo at right). Tread width is 12 feet. Clearing limits vary from 22 to 28 feet. Surface ranges from pit run aggregate to native sandy loam (Padus). This segment has a level alignment with large radius horizontal curves. The result is a trail segment ranked low for mitigation.



FT 214 (DH7 – DH8)

DH 7 to DH 8 tail segment begins approximately 0.32 miles north of the intersection with FR 182 and ends at the intersection with FT 214B (Cayuga Connector). This trail segment is 2.91 miles in length (see Figure B-12, Appendix B). Tread width varies from 7 feet to 10 feet. Clearing limits vary from 13 feet to 28 feet. Surface varies from pit run aggregate to native fine sandy loam (Shanagolden).

From DH 7 to MP 0.89 tread width averages 10 feet. Clearing limits averages 20 feet. Surface is native sandy loam (Padus). This trail segment has numerous recommendations for improving sight distance on horizontal curves. Normally tread width on this segment would be adequate when considering sight distance, but in this case poor trail tread condition, mud, and water limits where vehicles can operate within the tread width. The result is a moderate ranking for mitigation.

From MP 0.89 to MP 1.15 tread width is 7 feet. Clearing limits are 13 feet. Surface is native fine sandy loam (Shanagolden). This segment is extremely wet and rutted with standing water throughout the trail tread. That combined with narrow clearing limits and limited passable width on the tread results in a high ranking for mitigation.

From MP 1.15 to MP 1.93 tread width averages 8 feet. Clearing limits average 18 feet. Surface is native sandy loam (Padus, Stanberry). Although tread width and clearing limits as measured are adequate and meet design standards, trail condition due to rutting, standing water, combined with no less than 10 locations where sight distance is limited (photo), mitigation ranking is moderate.



From MP 1.93 to MP 2.31 tread width averages 10 feet. Clearing limits vary from 22 feet to 28 feet. Surface is failed pit run aggregate. This trail segment runs coincident to FR 1333 (ML 1). Ranking for mitigation is low on the segment and would be suitable for UTV.

From MP 2.31 to MP 2.91 (DH 8) tread width averages 7 feet. Clearing limits average 18 feet. Surface ranges from pit run aggregate to native fine sandy loam (Annalake). This segment has four locations where vertical and horizontal alignment result in limited sight distance. The result is a moderate ranking for mitigation.

FT 214 (DH5 – DH9)

DH 5 to DH 9 tail segment begins at the intersection with FT 214 south loop intersection and ends at the intersection with Wisconsin State highway 77. This trail segment is part of the FT 214 east loop and is 4.39 miles in length (see Figure B-13, Appendix B). Tread width varies from 6 feet to 12 feet. Clearing limits vary from 6 feet to 16 feet. Surface varies from pit run aggregate to native fine sandy loam (Peeksville).

From DH 5 heading north to MP 0.35 tread width averages 6 feet wide. Clearing limits vary from 6 to 10 feet. Surface is native loamy fine sand (Karlin) and sandy loam (Padus). Tread width and clearing are narrow on this segment to the point where trail width cannot physically accommodate two way traffic of any sort. As a result this segment has been ranked high for mitigation.

From MP 0.35 to MP 0.45 the trail runs coincident with FR 170 (ML 4) where it crosses East torch River.

From MP 0.45 to MP 2.37 tread width varies from 6 to 7 feet. Clearing limits vary from 8 to 12 feet. Surface ranges from pit run aggregate to fine sandy loam (Peeksville). Although this segment is wider on average

than the previous segment and has areas where passage of vehicles could occur, overall condition combined with limited sight distance has resulted in a moderate mitigation ranking.

From MP 2.37 to MP 2.44 the trail runs coincident with FR 335 (ML 4) where it crosses an un-named stream.

From MP 2.44 to MP 2.79 tread width averages 7 feet. Clearing limits average 12 feet. Surface is native sandy loam (Padus). Although this segment is wider than previous segments, stretches narrowed by encroaching brush make passage for oncoming vehicles difficult. Two locations have also been identified where sight distance is severely limited on horizontal curves. The result is a moderate ranking for mitigation.

From MP 2.79 to MP 4.12 tread width varies from 6 to 8 feet. Clearing limits vary from 10 to 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). With the exception of one 0.16 mile stretch, this segment runs coincident with ML 1 and ML 2 roads. One short stretch (200 feet) of narrow tread and clearing width was observed that did allow for pull out passage for oncoming vehicles. One other recommendation was made to lay back a cut slope to improve sight distance. In whole this segment meets minimum design standards and would be suitable for UTV designation.

From MP 4.12 to MP 4.39 (DH 9) tread width averages 6 feet. Clearing limits average 10 feet. Surface varies from aggregate to native sandy loam (Padus-Karlin). This segment has two locations where specific mitigation has been identified. Although tread width and clearing limits meet minimum design standards, it would be difficult for oncoming vehicles to pass on this segment (photo). Therefore the mitigation ranking for this segment is moderate.



FT 214 (DH9 – DH8)

DH 9 to DH 8 tail segment begins at the intersection with Wisconsin State highway 77 and ends at the intersection with FT 214B (Cayuga Connector). This trail segment is also part of the FT 214 east loop and is 4.09 miles in length (see Figure B-14, Appendix B). Tread width varies from 6 feet to 7 feet. Clearing limits vary from 8 feet to 22 feet. Surface varies from pit run aggregate to native fine sandy loam (Peeksville).

From DH9 to MP 0.94 tread width averages 6 feet. Clearing limits average 12 feet. Surface is native sandy loam (Padus-Karlin, Keweenaw-Pence). This segment has five locations where specific mitigation has been identified. As was the case with the previous segment discussed, tread width and clearing limits very minimally meet design standards. The result is that it would also be difficult for oncoming vehicles to pass on this segment. Therefore the mitigation ranking for this segment is moderate.

From MP 0.94 to MP 1.25 the trail runs coincident with ML 1 roads. Bare tread width is 7 feet wide due to low level of use on this segment. Remainder of actual 8 to 10 foot tread width is sod covered. Clearing limits average 20 to 22 feet. Surface ranges from pit run aggregate to native sandy loam (Keweenaw-Pence). This trail segment meets or exceeds minimum design standards and would be suitable for UTV.

From MP 1.25 to MP 1.30 tread width remains 7 feet. Clearing limits are 20 feet. Surface is native sandy loam (Keweenaw-Pence). Although this segment appears to meet minimum standards based on measurements, bare tread width has shifted to the inside of horizontal curves through this short segment. Vegetation is encroaching on these curves, reducing sight distance. The result is a moderate ranking for mitigation.

From MP 1.30 to MP 2.40 tread width is 6 feet. Clearing limits vary from 8 feet to 12 feet. Surface is fine sandy loam (Shanagolden). This segment also runs coincident with old logging roads. Horizontal and vertical alignment is level and straight. Although this segment meets, but does not exceed minimum design standards, numerous locations exist where vehicles could pull over to allow passage for oncoming traffic. The result is a low ranking for mitigation. This trail segment would benefit from brushing throughout the historic clearing limits where vegetation now encroaches.

From MP 2.40 to MP 2.88 tread width is 7 feet. Clearing limits vary from 16 to 22 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). This trail segment has a winding horizontal alignment, and brush is beginning to encroach within existing clearing limits. That, combined with narrow tread width has resulted in a moderate ranking for mitigation.

From MP 2.88 to MP 3.65 tread width is 6 feet. Clearing limits are 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). Although tread width does not exceed minimum design standards, numerous locations exist along this segment that allow for passage of oncoming vehicles. One location has been identified for sight distance mitigation on the entire 0.77 mile segment. The result is a low ranking for mitigation. Additional brushing would further enhance the safety on this segment.

From MP 3.65 to MP 3.76 the trail runs coincident with FR 347 (ML 4) where it crosses Ding Dong Creek.

From MP 3.76 to MP 4.08 tread width is 5 to 6 feet. Clearing limits are 13 feet. Surface ranges from pit run aggregate to native sandy loam (Keweenaw-Pence). This segment has a winding horizontal alignment with three locations where sight distance is severely limited on curves (photo). The result is a high ranking for mitigation.



From MP 4.08 to MP 4.09 at DH 8 tread width is 5 to 6 feet. Clearing limits vary from 8 feet to 10 feet. Surface is fine sandy loam (Annalake). Horizontal alignment is straight and level. Although this segment is narrow based on measurements, and would not allow for oncoming vehicle passage, the segment has sight distance from end to end. The result is a moderate ranking for mitigation.

FT 214B (Cayuga Connector; DH 8 – FR 601)

DH 8 to FR 601 tail segment begins at the intersection with FT 214 at DH 8 and ends at the intersection with FR 601. This trail segment is 8.20 miles in length (see Figure B-15, Appendix B). Tread width varies from 7 feet to 10 feet. Clearing limits vary from 14 feet to 18 feet. Surface ranges from aggregate to native fine sandy loam (Peeksville).

From DH 8 to MP 3.25 tread width varies from 8 to 10 feet. Clearing limits vary from 12 feet to 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Annalake). This segment meets or exceeds minimum design standards, but has a very windy horizontal alignment. The result is that sight distance is limited throughout most of the segment. Therefore mitigation ranking is moderate.

From MP 3.25 to MP 3.44 the trail runs coincident with FR 183 (ML 4) at an un-named tributary to Brush Creek crossing.

From MP 3.44 to MP 4.27 tread width averages 9 feet. Clearing limits vary from 16 to 18 feet. Surface ranges from pit run aggregate to native sandy loam (Keweenaw-Pence). Due to horizontal and vertical

alignment that are fairly straight and level, coupled with tread width and clearing limits that exceed minimum design standards, this trail segment would be suitable for UTV designation.

From MP 4.27 to MP 4.48 tread width varies from 6 to 9 feet. Clearing limits vary from 14 feet to 18 feet. Surface ranges from native sandy loam (Keweenaw-Pence) to native silt loam (Minocqua-Wozny-Pleine). This trail segment has a vertical and horizontal alignment that severely limits sight distance. Five locations have been identified where clearing or earthwork is recommended. A crash site with vehicle parts was also identified on this segment (photo). The result is a high ranking for mitigation.



From MP 4.48 to MP 4.65 tread width varies from 5 to 9 feet. Clearing limits average 16 feet. Surface is native sandy loam (Keweenaw-Pence). This segment has narrow tread width in places that would need to be widened in order to meet design standards for UTV, therefore ranking for mitigation is moderate.

From MP 4.65 to MP 5.26 tread width varies from 7 to 9 feet. Clearing limits vary from 16 to 18 feet. Surface ranges from crushed rock to native fine sandy loam (Gogebic-Pence-Cathrow). Although this segment meets or exceeds design standards throughout, one recommendation has been made to increase tread width. This segment also has a bridge at MP 4.83 where it crosses Brush Creek (photo). The trail bridge is 12 feet wide. Two delineators are damaged and need to be replaced. This entire segment meets or exceeds minimum standards and would be suitable for UTV designation.



From MP 5.26 to MP 5.75 tread width averages 7 feet. Clearing limits average 18 feet. Surface ranges from pit run aggregate to native fine sandy loam (Peeksville). This trail segment has seven locations where sight distance is recommended for improvement. This segment also has a bridge at MP 5.74 where it crosses an un-named tributary to Brush Creek. The trail bridge width is 12 feet. Although tread width and clearing width meet or exceed design parameters this segment is ranked moderate for mitigation due to limited sight distance on horizontal and vertical curves.

From MP 5.75 to MP 6.07 tread width varies from 5 feet to 7 feet. Clearing limits vary from 12 to 14 feet. Surface is pit run aggregate. This segment is narrower than minimum design parameters on more than 50 percent of its length. Six locations have also been identified where sight distance needs improvement on horizontal curves. The result is a high ranking for mitigation.

From MP 6.07 to MP 6.65 tread width averages 7 feet. Clearing limits vary from 16 to 18 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). This entire segment meets or exceeds minimum design standards with the exception of three very small radius horizontal curves where sight distance is limited. Each of the three locations have been ranked moderate for mitigation due to each curve exceeding 90 degrees. The remainder of this segment has been ranked low for mitigation.

From MP 6.65 to MP 6.69 tread width varies from 52 inches to 7 feet. Clearing limits average 16 feet. Surface is native fine sandy loam (Shanagolden). This short segment has an impassable mud hole with a user created detour. The detour is has 52 inch tread width and clearing width. UTVs would not physically fit through this user created detour. Therefore this short segment has been ranked high for mitigation.

From MP 6.69 to MP 6.94 tread width averages 7 feet. Clearing limits again average 16 feet. Surface also remains native fine sandy loam (Shanagolden). Although this segment exceeds minimum design parameters, four locations have been identified where sight distance on horizontal curves is limited, resulting in a moderate ranking for mitigation.

From MP 6.94 to MP 7.27 tread width continues to averages 7 feet. Clearing limits continue to average 16 feet. Surface ranges from native fine sandy loam (Shanagolden) to native sandy loam (Keweenaw-Pence). This trail segment has a uniform horizontal and vertical alignment with one location where sight distance should be improved. The result is a low ranking for mitigation.

From MP 7.27 to MP 7.31 the trail runs coincident with FR 363 (ML 3) and FR 356 (ML 4).

From MP 7.31 to MP 8.20 at FR 601 tread width varies from 6 to 7 feet. Clearing limits vary from 14 feet to 16 feet. Surface is native sandy loam (Keweenaw-Pence). Although this trail segment meets minimum design standards, increased tread width would be needed due to the very wet, near impassable conditions. The author encountered two separate locations where the ATV had to be winched through mud holes. The result is a moderate ranking for mitigation on this segment.

FT 214C (Clam Lake Connector; Clam Lake – FR 182)

The Clam Lake connector [tail segment begins at the intersection with](#) Ashland County highway GG in Clam Lake, Wisconsin [and ends at the intersection with](#) FT 214 and FR 182 approximately 0.3 miles south of DH 7. [This trail segment is 6.95 miles in length](#) (see Figure B-16, Appendix B). [Tread width varies from 7 feet to 13 feet. Clearing limits vary from 16 feet to 22 feet. Surface varies from aggregate to native fine sandy loam \(Shanagolden\).](#)

From the intersection with Ashland CTY GG where it crosses East Fork Chippewa River to 0.32 tread width varies from 7 to 9 feet. Clearing limits average 20 feet. Surface is native sandy loam (Tipler-Manitowish). Based on existing design parameters combined with level horizontal and flat vertical alignment, this segment has been ranked low for mitigation and would be suitable for UTV designation.

From MP 0.32 to MP 0.58 the trail runs coincident with FR 1296 (ML 4).

From MP 0.58 to MP 1.89 tread width varies from 9 to 13 feet. Clearing limits vary from 16 to 22 feet. Surface ranges from crushed aggregate to native fine sandy loam (Shanagolden). One location has been identified on this segment, recommending signage for a steep grade. The remainder of the trail exceeds minimum design parameters and would be suitable for UTV designation (photo).

From MP 1.89 to MP 1.95 the trail runs coincident with FR 345 (ML 4).

From MP 1.95 to MP 3.35 tread width varies from 7 to 9 feet.



Clearing limits vary from 18 to 22 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). Although this trail segments has three locations where recommendations have been made, one is a tree top hanging over the trail, while the other two are for increased clearing. Tread width and large radius horizontal curves at these locations is sufficient to allow for avoidance and passage of oncoming vehicles. The result is a low ranking for mitigation. This trail segment would be suitable for UTV designation.

From MP 3.35 to MP 3.83 the trail runs coincident with FR 193 (ML 4).

From MP 3.83 to MP 4.46 tread width varied from 8 to 16 feet. Clearing limits vary from 20 to 28 feet. Surface ranges from native fine sandy loam (Shanagolden) to native sandy loam (Padus-Karlin). This segment exceeds design parameters throughout, resulting in a low ranking for mitigation and would be suitable for UTV designation.

From MP 4.46 to the intersection with FT 214 at MP 6.95, the trail runs coincident with FR 195 (ML 4) and FR 182 (ML 4).

Forest Trail 421, 405 – Chippewa Flowage, Moose Lake, Blaisdell Lake Connector

FT 405 (FT 421 – FR 320)

FT 405 begins at the intersection with FT 421 approximately 0.02 miles north of FR 164 and ends at the intersection with FR 320. This trail segment is 1.60 miles in length (see Figure B-17, Appendix B). Tread width averages 8 feet. Clearing limits vary from 20 to 28 feet. Surface ranges from aggregate to native silt loam (Minocqua-Wozny-Pleine).

From the intersection with FT 421 to MP 0.57 tread width averages 8 feet. Clearing limits vary from 20 to 28 feet. Surface ranges from pit run aggregate to native silt loam (Butternut). This segment exceeds design parameters throughout resulting in a low ranking for mitigation.

From MP 0.57 to MP 0.60 tread width could not be measured. Clearing limits are 28 feet. Surface is inundated and consists of native silt loam (Minocqua-Wozny-Pleine). This segment is a natural ash swamp crossing with no fill, resulting in a nearly impassable inundated trail section. The result is a high ranking for mitigation.

From MP 0.60 to MP 1.60 tread width averages 8 feet. Clearing limits average 22 feet. Surface ranges from pit run aggregate to native silt loam (Butternut). As a result of this trail segment exceeding design parameters throughout, a low ranking for mitigation has been assigned (photo). All recommendations on this segment are for drainage structures and do not impede safety.



FT 421 (FR 319 – Sawyer CTY S)

This FT 421 segment begins at the intersection with FR 319 approximately 0.13 miles north of the south Forest boundary and ends at the intersection with Sawyer County highway S. This trail segment is 5.74 miles in length (see Figure B-18, Appendix B). Tread width varies from 6 to 10 feet. Clearing limits vary from 13 to 22 feet. Surface ranges from aggregate to native silt loam (Torch).

From FR 319 to MP 2.24 tread width averages 7 feet. Clearing limits vary from 14 to 16 feet. Surface ranges from native sandy loam (Padus-Karlin) to native silt loam (Torch). Although this trail segment is very wet, existing design standards result in a low ranking for mitigation, which make it suitable for UTV designation.

From MP 2.24 to MP 2.45 tread width averages 7 feet. Clearing limits average 16 feet. Surface is native sandy loam (Padus-Karlin). Limited sight distance due to small radius horizontal and vertical curves has been identified at four locations on this segment. The result is a moderate ranking for mitigation.

From MP 2.45 to MP 2.63 tread width averages 7 feet. Clearing limits average 16 feet. Surface ranges from native sandy loam (Padus-Karlin) to native silt loam (Butternut). This short segment has a horizontal and vertical alignment coupled with zero recommendations for mitigation that result in a low ranking. This short segment would be suitable for UTV.

From MP 2.63 to MP 2.84 tread width still averages 7 feet. Clearing limits remain at 14 feet. Surface is native sandy loam (Padus-Karlin). This short segment has poor vertical alignment that severely limits sight distance. A crash site was also observed at the midpoint of this segment. The result is a high ranking for mitigation that would involve earthwork to improve sight distance on vertical curves.

From MP 2.84 to MP 3.49 tread width varies from 7 to 10 feet. Clearing limits vary from 14 to 16 feet. Surface ranges from native sandy loam (Padus-Karlin) to native silt loam (Butternut). Although this segment is wet and has pockets of standing water, only one location has been identified where clearing would improve sight distance. The result is a low ranking for mitigation.

From MP 3.49 to MP 5.40 the trail runs coincident with specified logging roads constructed by a private timber company (photo). Tread width on this segment varies from 8 to 10 feet. Clearing limits vary from 18 to 22 feet. Surface is pit run aggregate. One location has been identified for mitigation that involves replacing a drainage structure. No instances of deficient existing design standards were observed. The result is a low ranking for mitigation. This trail segment would be suitable for UTV designation.



From MP 5.40 to MP 5.49 tread width varies from 6 to 8 feet. Clearing limits vary from 13 to 16 feet. Horizontal and vertical alignment results in a very windy trail segment with limited sight distance. The result is a moderate ranking for mitigation.

From MP 5.49 to MP 5.74 tread width averages 10 feet. Clearing limits average 16 feet. Surface ranges from crushed aggregate to native silt loam (Butternut). This segment runs coincident with a special use permit road and is in good condition. No locations have been identified for mitigation resulting in a low ranking.

FT 421 (Sawyer CTY S – FR 305)

This FT 421 segment begins at the intersection with Sawyer County highway S and ends at the intersection with FR 305. This trail segment is 7.16 miles in length (see Figure B-19, Appendix B). Tread width varies from 7 to 9 feet. Clearing limits vary from 14 to 16 feet. Surface ranges from crushed aggregate to native silt loam (Minocqua-Wozny-Pleine).

From Sawyer County highway S to MP 0.14 the trail runs coincident with FR 164 where it crosses West Fork Chippewa River.

From MP 0.14 to MP 0.47 tread width averages 7 feet. Clearing limits varies from 14 to 16 feet. Surface is native sandy loam (Padus-Karlin). This segment has three locations where sight distance is limited. The result is a moderate ranking for mitigation.

From MP 0.47 to MP 0.55 tread width averages 8 feet. Clearing limits average 16 feet. Surface is native sandy loam (Padus-Karlin). This segment has no deficiencies and exceeds design parameters throughout. The result is a low ranking for mitigation.

From MP 0.55 to MP 0.60 tread width remains 8 feet. Clearing limits also remain at 16 feet. Surface is once again native sandy loam (Padus-Karlin). This short segment has two locations where small radius horizontal curves severely limit sight distance (photo at right), resulting in a moderate ranking for mitigation.

From MP 0.60 to MP 1.61 tread width varies from 8 to 9 feet. Clearing limits vary from 14 to 16 feet. Surface ranges from pit run aggregate to native loamy sand (Sayner-Lindquist). This segment exceeds minimum design standards throughout resulting in a low ranking for mitigation. This segment would be suitable for UTV designation.



From MP 1.61 to MP 1.84 tread width averages 8 feet. Clearing limits average 8 feet. Surface is pit run aggregate. Due to encroachment by adjacent vegetation that limits sight distance throughout the segment, a moderate ranking has been assigned for mitigation.

From MP 1.84 to MP 2.37 tread width averages 8 feet. Clearing limits average 14 feet. Surface is pit run aggregate. This segment has no recommendations for mitigation resulting in a low ranking for mitigation, and would be suitable for UTV designation.

From MP 2.37 to MP 2.56 tread width averages 8 feet. Clearing limits average 14 feet. Surface is pit run aggregate. Three locations have been identified on small radius horizontal curves where sight distance is limited. The result is a moderate ranking for mitigation.

From MP 2.56 to MP 6.91 tread width varies from 7 to 16 feet. Clearing limits vary from 12 to 20 feet. Surface ranges from pit run aggregate to native sandy loam (Stanberry). Although this trail segment has four locations identified for increasing sight distance, the combination of wider tread width, clearing width and large radius curves reduces the mitigation factor at these locations. The result is a low ranking for mitigation. This trail segment would be suitable for UTV designation.

From MP 6.91 to MP 7.06 tread width averages 7 feet. Clearing limits average 14 feet. Surface is native sandy loam (Stanberry). This short segment has two locations where sight distance is limited on horizontal curves. That coupled with narrower tread width and clearing width result in a moderate ranking for mitigation.

From MP 7.06 to MP 7.16 tread width averages 7 feet. Clearing limits once again average 14 feet. Surface continues to be native sandy loam (Stanberry). Although this segment has the same design condition as the previous segment, the straight level alignment result in a low ranking for mitigation.

FT 421 (FR 305 – FR 308)

This FT 421 segment begins at the intersection with FR 305 and ends at the intersection with FR 308. This trail segment is 8.17 miles in length (See Figure B-20, Appendix B). Tread width varies from 7 to 12 feet. Clearing limits vary from 10 to 16 feet. Surface ranges from crushed aggregate to native silt loam (Minocqua-Wozny-Pleine).

From the intersection with FR 305 to MP 1.45 tread width averages 8.5 feet. Clearing limits vary from 14 to 16 feet. Surface is pit run aggregate. This entire segment runs coincident with FR 305 (ML 2). The segment has been ranked low for mitigation with three short individual curve exceptions where sight distance should be improved. Each of these three curves have been ranked moderate. The moderate ranking is due to mixed use already allowed on this segment. When corner brushing is complete, this segment would be suitable for UTV designation.

From MP 1.45 to MP 1.58 tread width averages 8 feet. Clearing limits average 14 feet. Surface is pit run aggregate. This short segment runs coincident with FR 305 (ML 2) and FR 306B (ML 2). Due to a lack of maintenance and encroachment by vegetation, four locations have been identified where sight distance is limited on horizontal curves. The result is a moderate ranking for mitigation.

From MP 1.58 to MP 1.73 tread width continues to average 8 feet. Clearing limits continue to average 14 feet. Surface is pit run aggregate. This short segment runs coincident with FR 306B (ML 2). Due to the straight level alignment on this segment a low ranking has been assigned for mitigation.

From MP 1.73 to MP 2.58 tread width varies from 7 to 9 feet. Clearing limits vary from 12 to 16 feet. Surface ranges from pit run aggregate to native sandy loam (Keweenaw-Pence). This segment runs coincident with FR 306B (ML 2) and FR 306 (ML 2). Although this segment exceeds minimum design parameters, eighteen locations have been identified where sight distance is limited on horizontal curves. That combined with the fact that this segment allows motorized mixed use, has resulted in a moderate ranking for mitigation (photo).



From MP 2.58 to MP 3.86 tread width averages 8 feet. Clearing limits average 16 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). This segment continues to run coincident with FR 306 (ML 2). This segment has a good horizontal and vertical alignment. That coupled with design parameters exceeding minimums throughout results in a low ranking for mitigation. One exception is a single horizontal curve where sight distance is limited. This curve has been ranked moderate for mitigation.

From MP 3.86 to MP 4.42 the trail runs coincident with FR 174 (ML 4) where it crosses Venison Creek.

From MP 4.42 to MP 4.98 tread width varies from 8 to 9 feet. Clearing limits vary from 14 to 16 feet. Surface ranges from large gradation crushed aggregate to native sandy loam (Stanberry). This segment has six locations where sight distance is limited on horizontal curves. The result is a moderate ranking for mitigation.

From MP 4.98 to MP 5.51 tread width varies from 8 to 12 feet. Clearing limits vary from 14 feet to 16 feet. Surface is native sandy loam (Stanberry). This segment exceeds minimum design parameters throughout, resulting in a low ranking for mitigation. As a result this trail segment would be suitable for UTV designation.

From MP 5.51 to MP 7.67 tread width varies from 8 to 10 feet. Clearing limits vary from 12 to 14 feet. Surface ranges from pit run aggregate to native sandy loam (Stanberry-Parkfalls-Wozny). Although portions of this trail segment run coincident with ML 2 roads (FR 171, FR 174J) thirty-two locations have been identified where mitigation would improve sight distance and reduce speed on vertical and horizontal curves. As a result of the numerous sight specific deficiencies, this segment has been ranked moderate for mitigation. Trail tread width that exceeds design parameters has prevented this segment from receiving a high ranking.

From MP 7.67 to MP 8.17 the trail is located entirely on private lands.

FT 421 (FR 308 – FR 308)

This FT 421 segment begins where it first intersects with FR 308 and ends at the intersection with FR 308 and Swietzer Road. This trail segment is 3.76 miles in length (see Figure B-21, Appendix B). Tread width averages 7 feet. Clearing limits average 12 feet. Surface ranges from large gradation crushed aggregate to native fine sandy loam (Shanagolden).

From MP 0.0 to MP 0.32 the trail runs coincident with FR 308 (ML 5).

From MP 0.32 to MP 0.65 the trail is located entirely on private lands.

From MP 0.65 to MP 0.91 tread width varies from 6 to 8 feet. Clearing limits vary from 10 to 12 feet (photo). Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). Although this segment meets minimum design standards, four locations have been identified where sight distance is limited on horizontal curves. The result is a moderate ranking for mitigation.



From MP 0.91 to MP 1.05 tread width continues to vary from 6 to 8 feet. Clearing limits continue to vary from 10 to 12 feet. Surface is native fine sandy loam (Shanagolden). This trail segment has a mostly straight and level alignment with no recommendations. The result is a low ranking for mitigation.

From MP 1.05 to MP 1.88 tread width continues to vary from 6 to 8 feet. Clearing limits continue to vary from 10 to 12 feet. Surface ranges from pit run aggregate to native fine sandy loam (Shanagolden). This segment has twelve locations identified where sight distance is limited on horizontal curves. Limited sight distance, combined with narrow tread width results in a moderate ranking for mitigation. This trail segment also has a bridge located at MP 1.58 at Fishtrap Creek. The trail bridge is 12 feet wide with full railings.

From MP 1.88 to MP 2.15 tread width continues to vary from 6 to 8 feet. Clearing limits continue to vary from 10 to 12 feet. Surface ranges from pit run aggregate to native sandy loam (Stanberry). Unlike the previous segment, this segment has a fairly straight and level alignment, resulting in a low ranking for mitigation.

From MP 2.15 to MP 2.75 tread width averages 6 feet. Clearing limits average 12 feet. Surface ranges from pit run aggregate to native sandy loam (Stanberry). Although a portion of this segment runs coincident with FR 784 (ML 2), lack of maintenance has allowed encroachment of vegetation that now limits sight distance on nine horizontal curves. The result is a moderate ranking for mitigation.

From MP 2.75 to MP 3.09 tread width averages 6 feet. Clearing limits average 12 feet. Surface ranges from pit run aggregate to native sandy loam (Stanberry). Horizontal alignment is improved over the previous segment, with one location identified where sight distance is limited. The result is a low ranking for mitigation.

From MP 3.09 to MP 3.61 the trail is located entirely on private lands.

From MP 3.09 to the intersection with FR 308 at MP 3.76 the trail runs coincident with Swietzer Road.

Cost Estimates

Cost estimates for heavy equipment have been derived from previously completed reconstruction, reconditioning, and/or maintenance projects completed on various motorized trails on the Chequamegon landbase of the CNNF. Individual estimates for handwork with chain saws were derived from personal experience with chainsaw work by the authors.

Reconstruction, Reconditioning, and Maintenance (Heavy Equipment)

Trail reconstruction includes brushing and clearing, widening, reconditioning or reshaping the trail tread, and placing surfacing.

Reconstruction cost per mile (well drained soils and/or dry conditions): \$10,000 - \$12,000 per mile*

*Haul distance for surfacing creates variable

Reconstruction cost per mile (poorly drained soils): \$20,000 - \$22,000 per mile*

*Haul distance for surfacing creates variable

Trail reconditioning and maintenance are so similar in fashion when utilizing heavy equipment that both categories have been combined below.

Recondition and maintenance cost per mile (sands and gravels): \$200 per mile

Recondition and maintenance cost per mile (poorly drained soils): \$300 per mile

Site specific mitigation such as laying back cut slopes or cutting vertical curves:

Site specific with dozer: \$65 per station (100 feet)*

*No mobilization

Site specific with dozer: \$150 per station (100 feet)*

*With mobilization

Mechanized brushing: \$480 per mile

Maintenance (Hand Work)

Hand work consists of a two person crew with chainsaws. Most work is limited to increasing clearing on horizontal curves, and includes removal of understory and brush. Work does not involve the removal of merchantable timber.

Site specific corner (curve) clearing: \$80.00 per station (deciduous setting)

Site specific corner (curve) clearing: \$110.00 per station (coniferous setting)

Consistency with the Forest Plan

All information provided in this report complies with Guidelines for use of motorized trails on the CNNF found on page 2-28 of the 2004 Land and Resource management Plan. Specifically this report has been limited to identification of suitable existing corridors for other off-road vehicles (Guideline 3); and the identification of suitable trails segments for UTV's that could provide multiple motorized recreation uses on motorized trails (Guideline 4).

Consistency with Laws, Regulations, Handbooks

The information provided in this report appears to be consistent with the following applicable laws, [rules](#), regulations and handbooks:

- Travel Management Rule (including 36 CFR 212, 251, 261, and 295)
- All Authorities listed in FSH 2309.18, Chapter 10
- [2009 Wisconsin Act 175](#)

Monitoring

[It is the recommendation that the CNNF develop a specific monitoring plan for trail segments allowing UTV's that provides information for future designation, as well as trail safety and impact. Monitoring could include traffic counts for UTV's, accident and/or crash data, noted changes in tread width and use pattern, or any combination of measurable statistics that could benefit user safety.](#)

LITERATURE CITED

FSH 2309.18, Chapter 10

Travel Management Rule (including 36 CFR 212, 251, 261, and 295)

PREPARED BY:

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Name: David Campbell

Position: Chequamegon-Nicolet Transportation Planner

Qualifications: Civil Engineering Technician

Professional Experience as a Transportation Planner since 2000.

APPENDIX A – DESIGN PARAMETER RATING MAPS

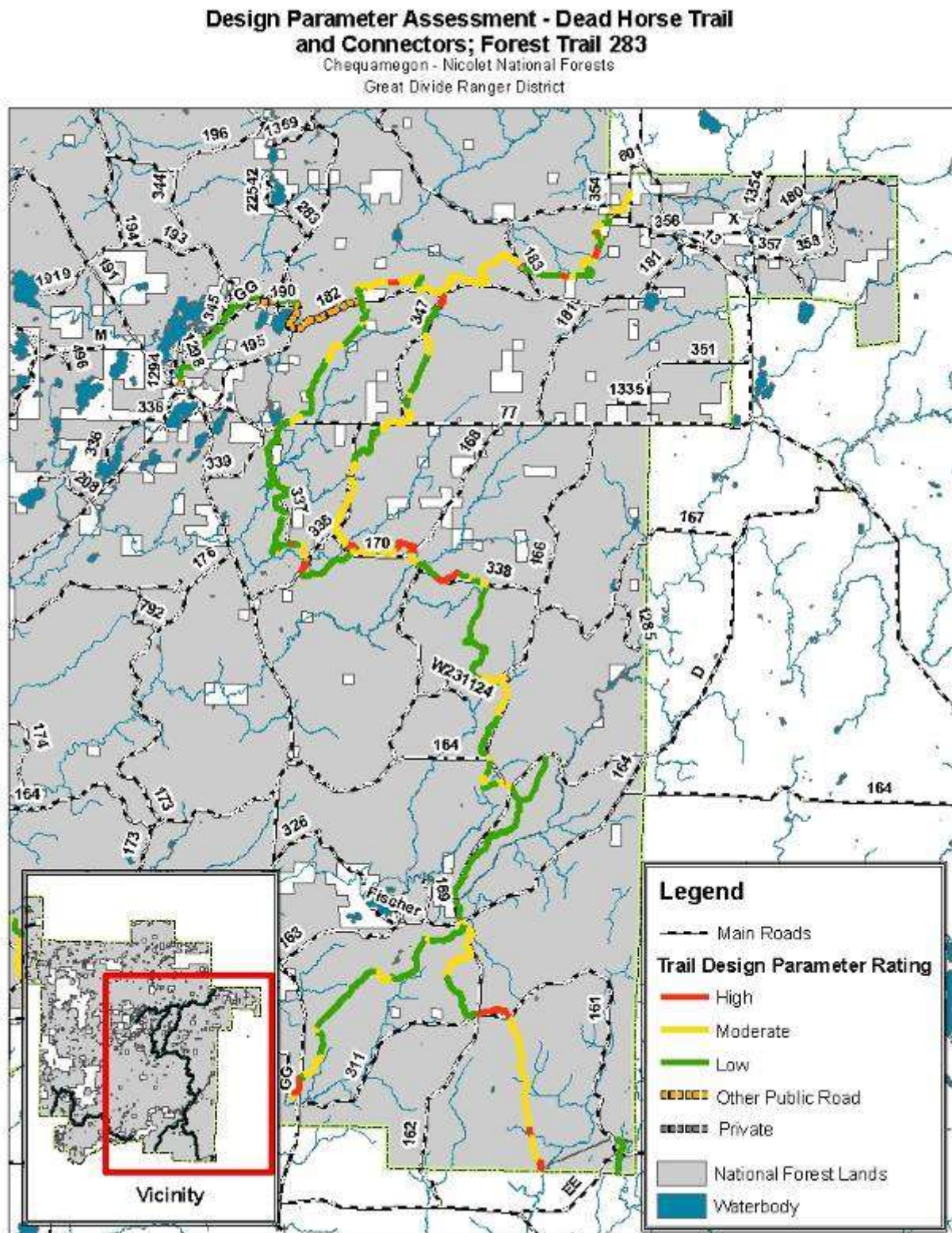


Figure A-1

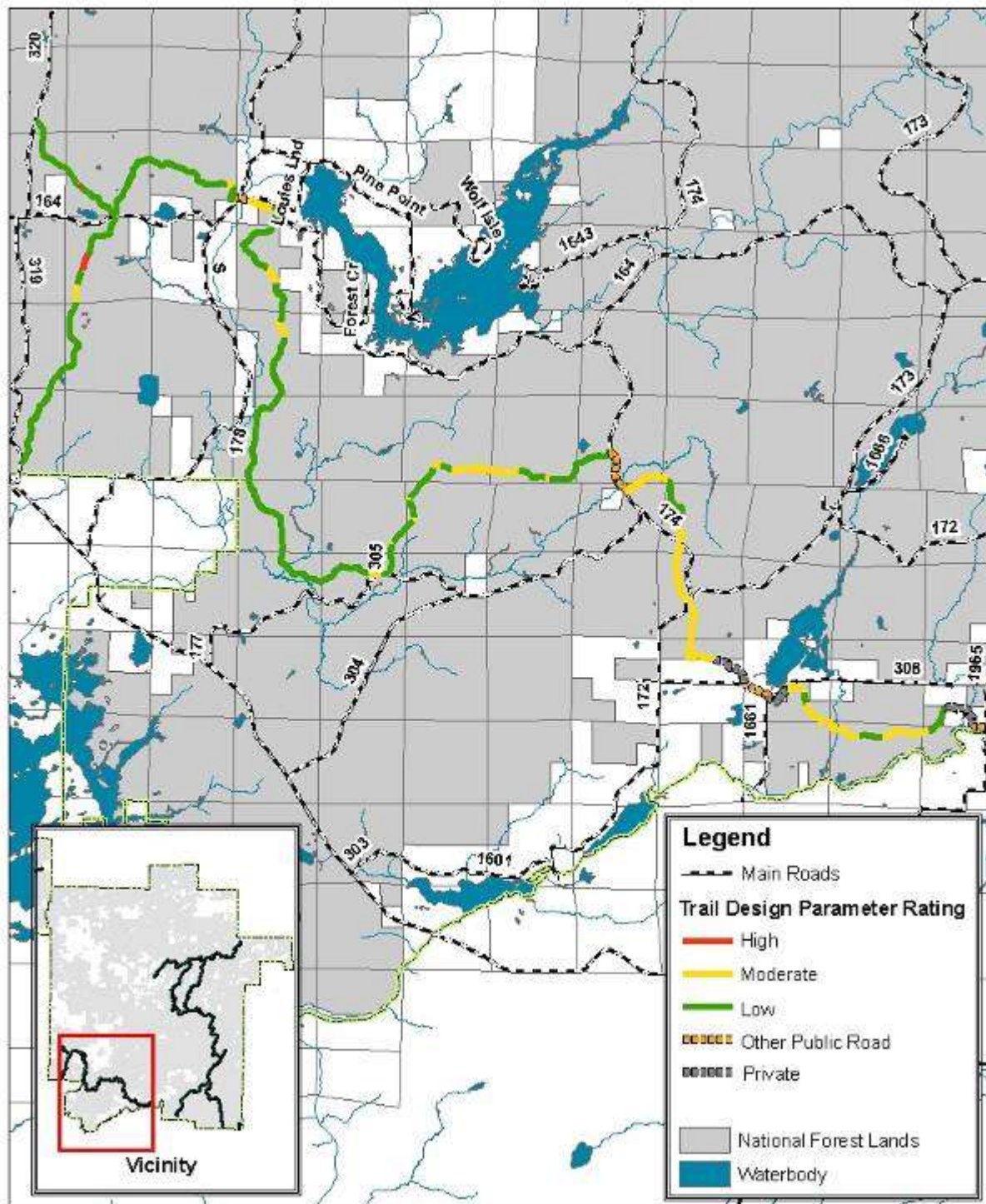
Design Parameter Assessment - Forest Trails 421 and 405Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure A-2

APPENDIX B – DETAIL ASSESSMENT MAPS

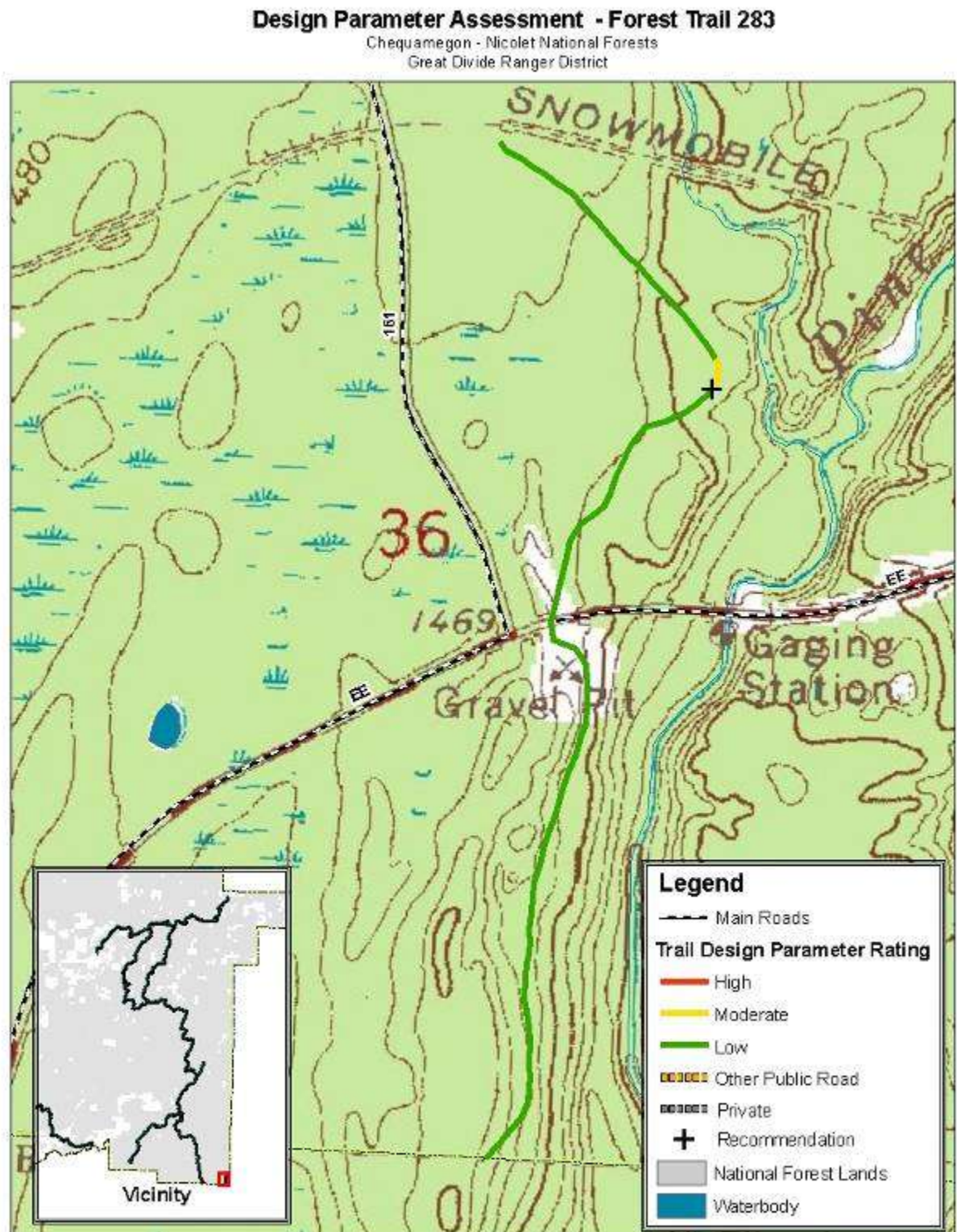


Figure B-1

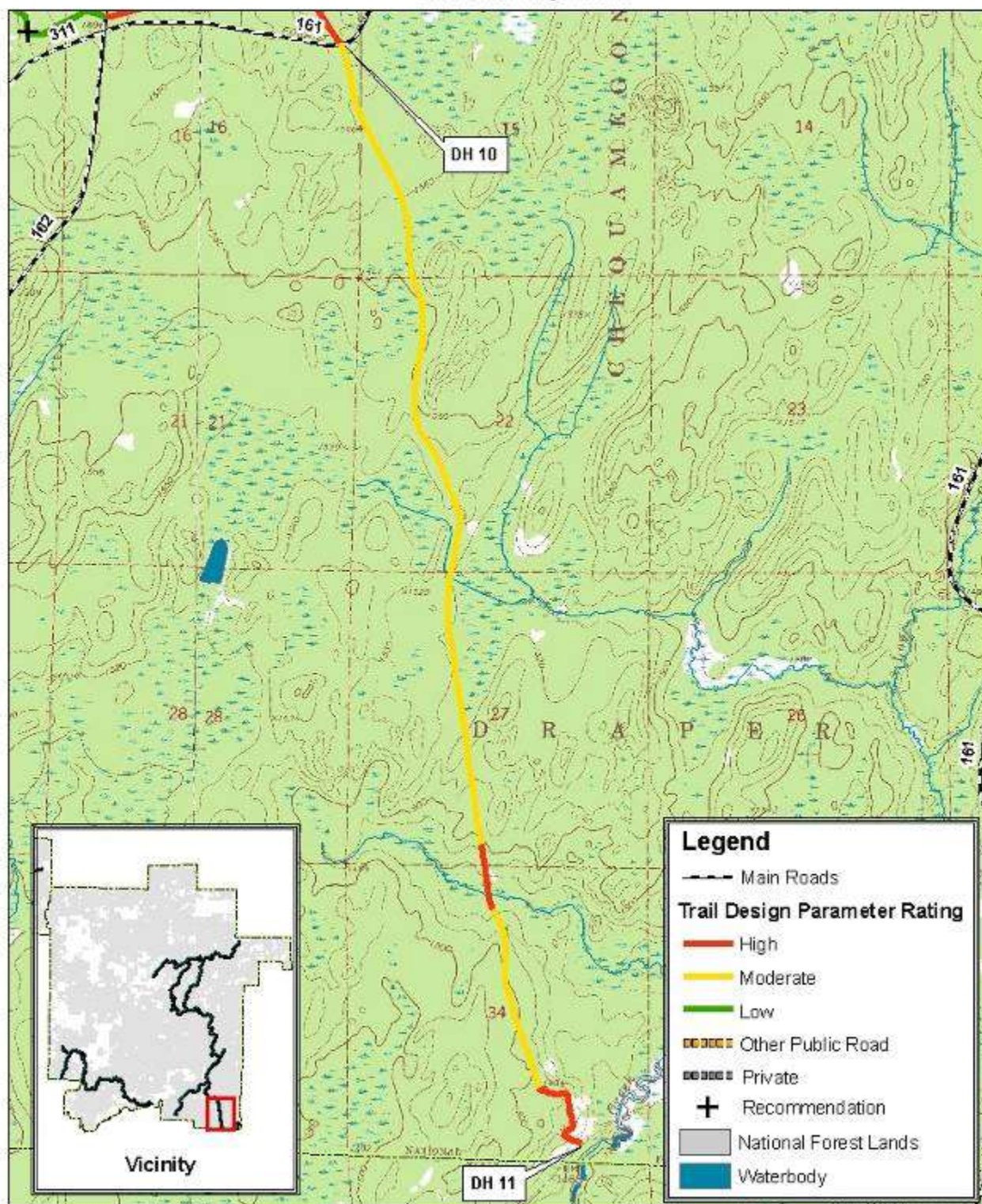
Design Parameter Assessment - Dead Horse (DH11 - DH10)Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure B-2

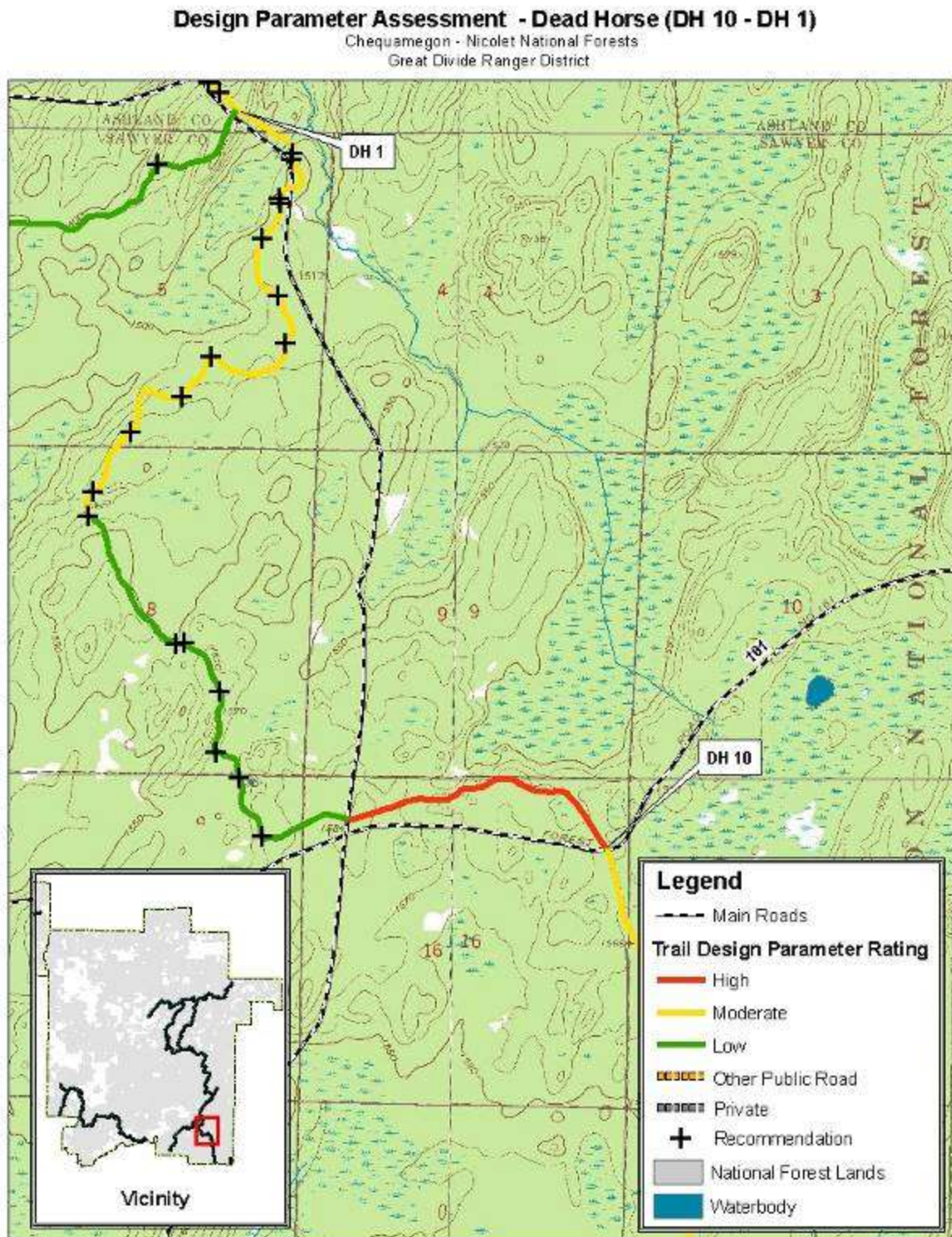
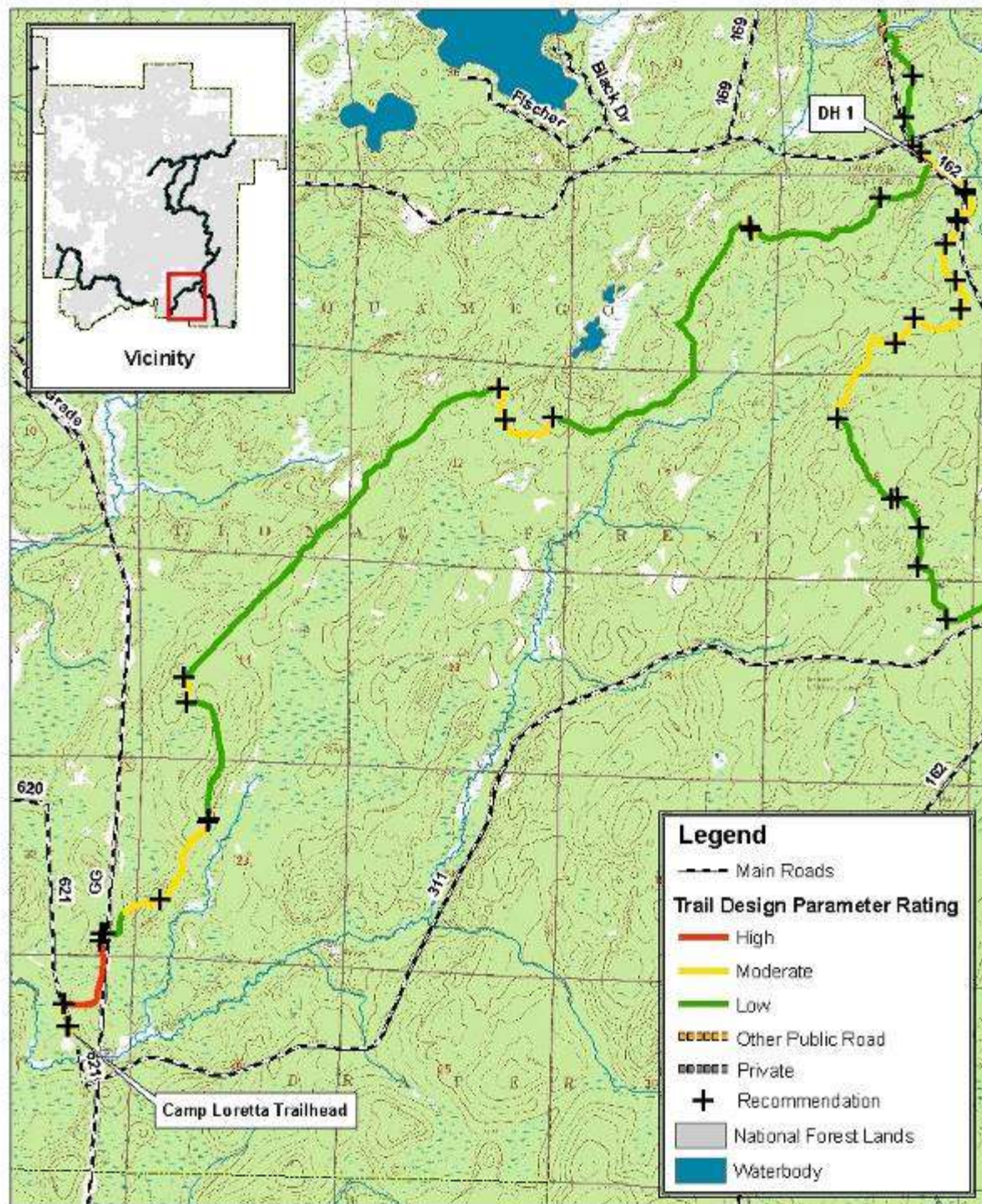


Figure B-3

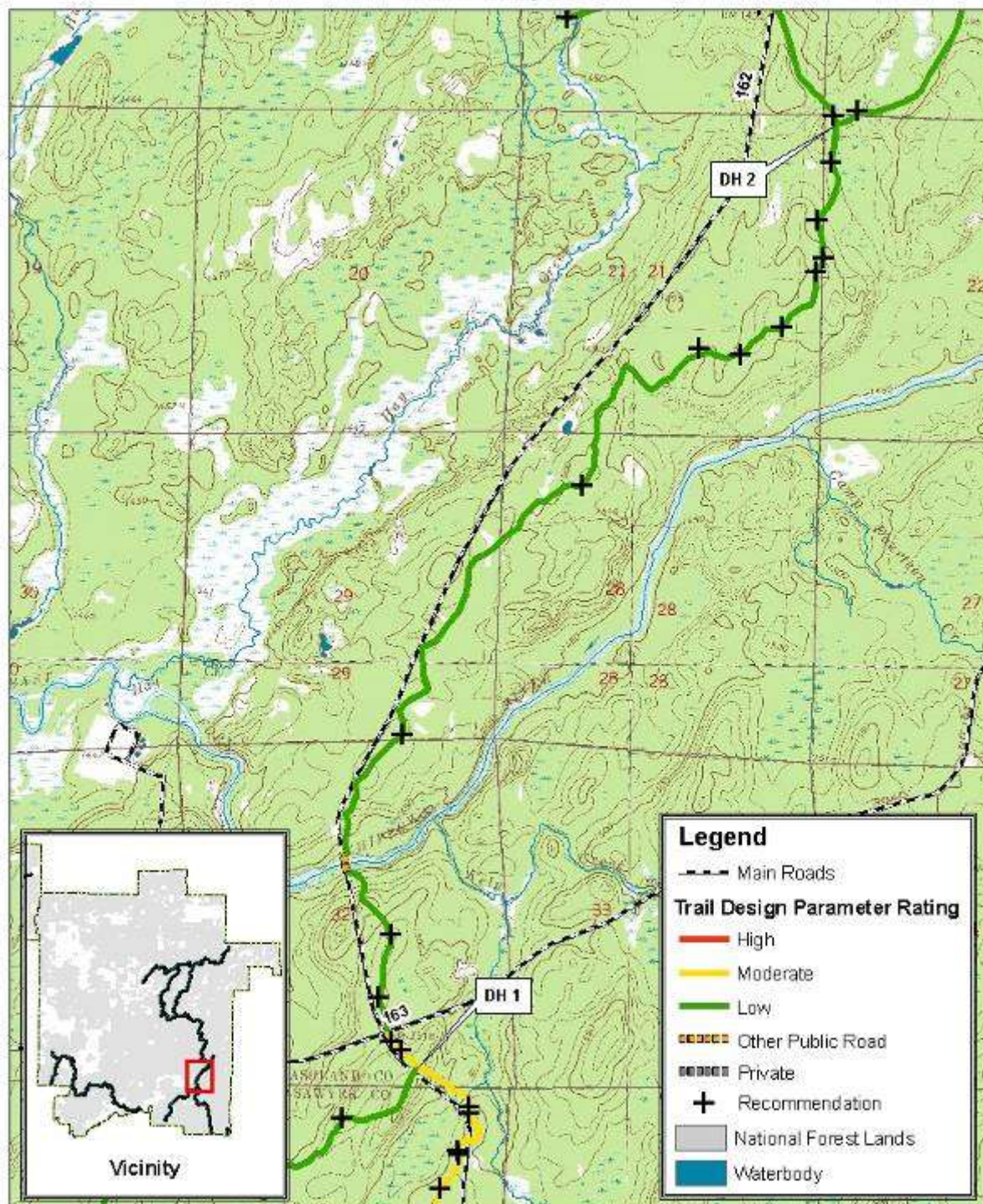
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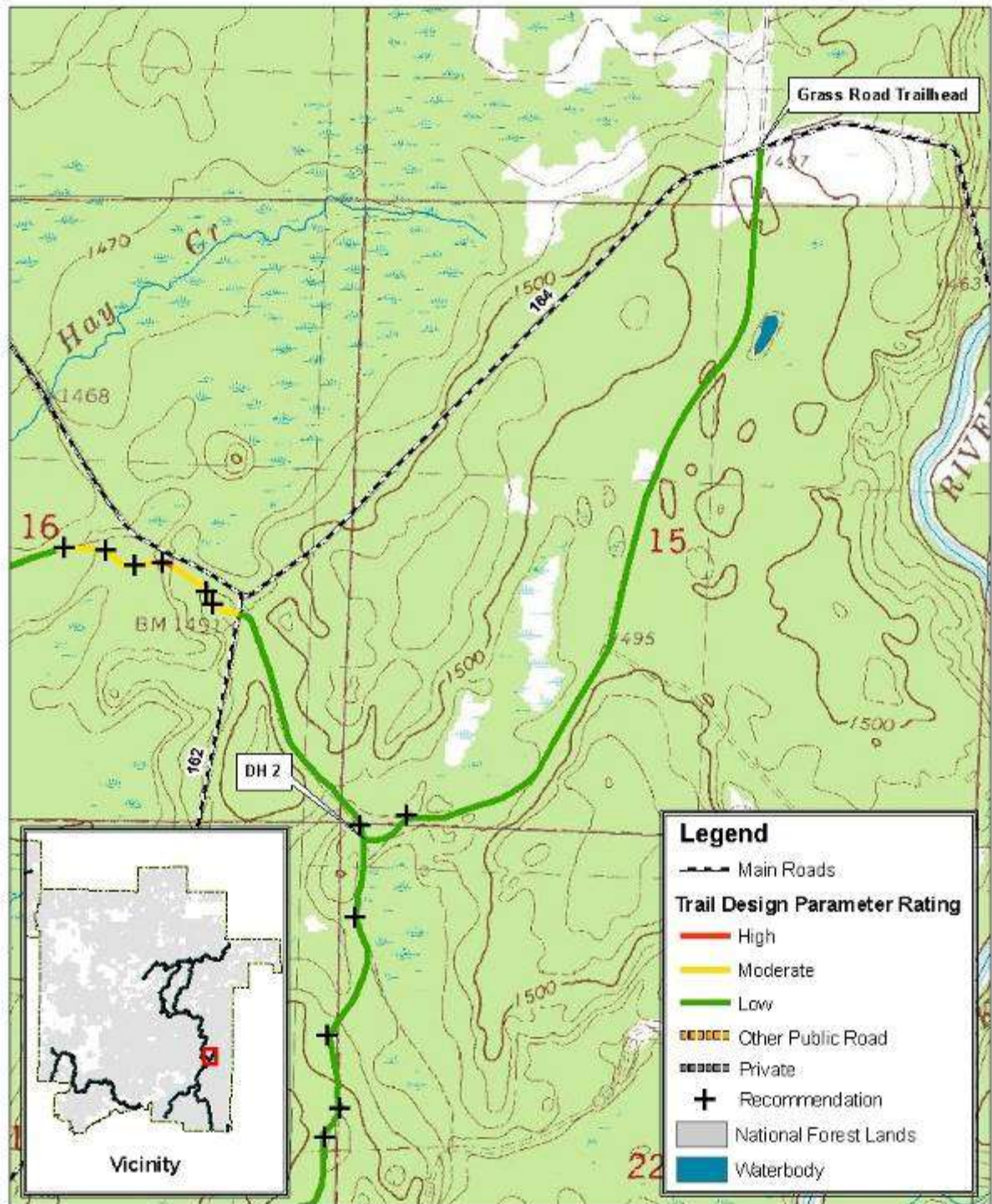
Chequamegon - Nicolet National Forests
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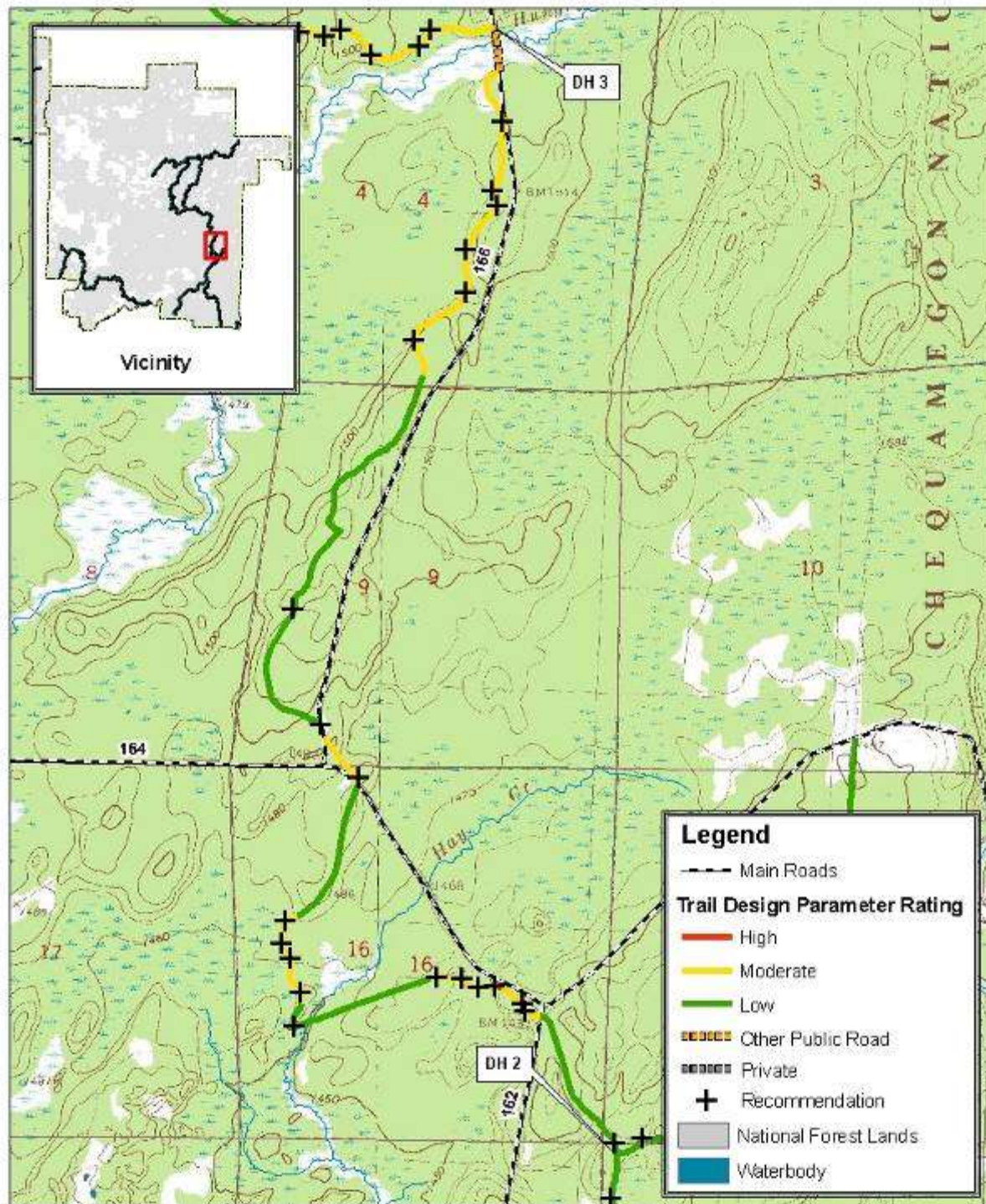


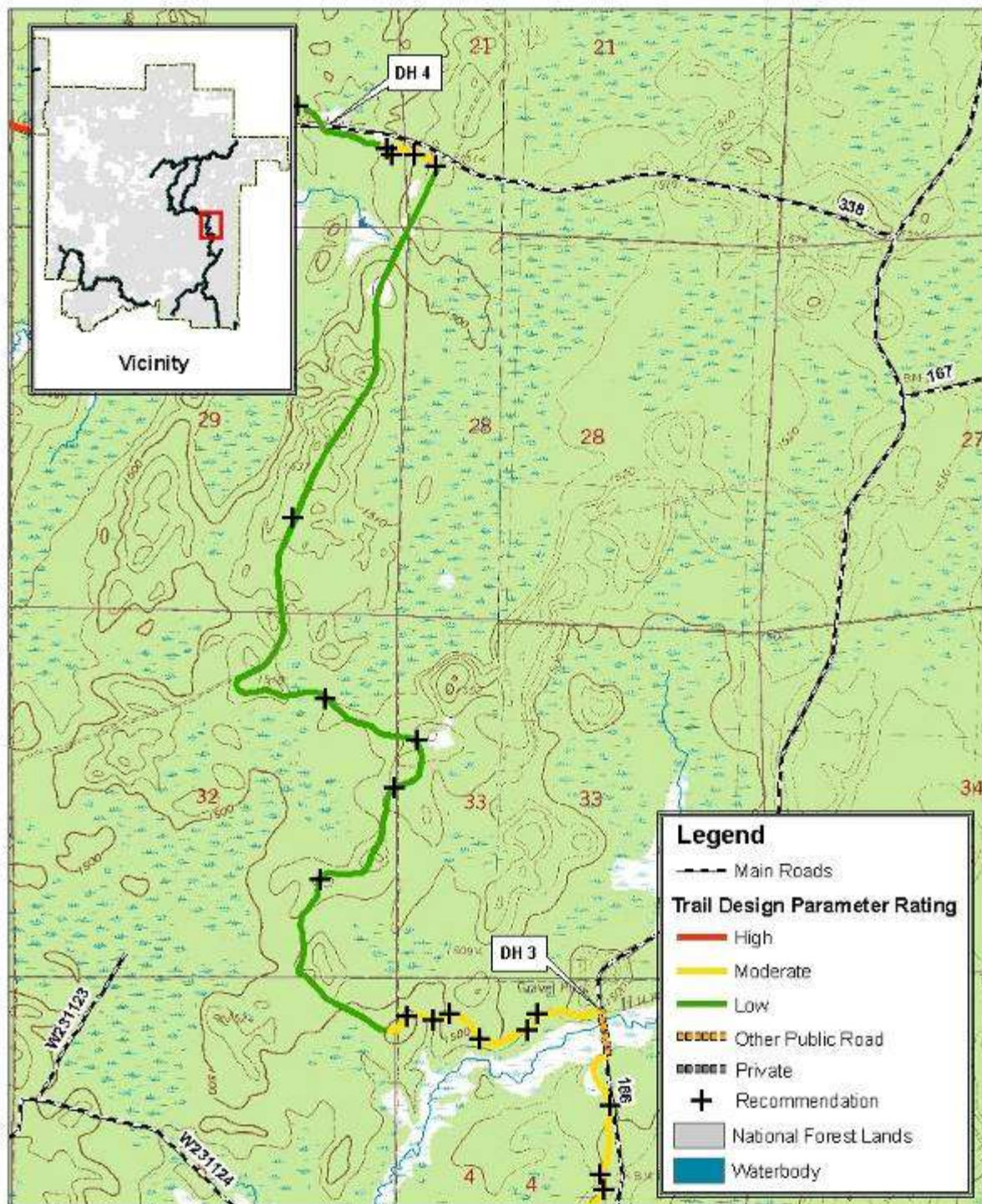
[Figure B-4](#)



Design Parameter Assessment - Dead Horse (DH 1 - DH 2)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-5**

Design Parameter Assessment - Dead Horse (DH 1 - Grass Road Trailhead)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-6**

Design Parameter Assessment - Dead Horse (DH 2 - DH 3)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-7**

Design Parameter Assessment - Dead Horse (DH 3 - DH 4)Chequamegon - Nicolet National Forests
Great Divide Ranger District

[Figure B-8](#)

Design Parameter Assessment - Dead Horse (DH 4 - DH 5)

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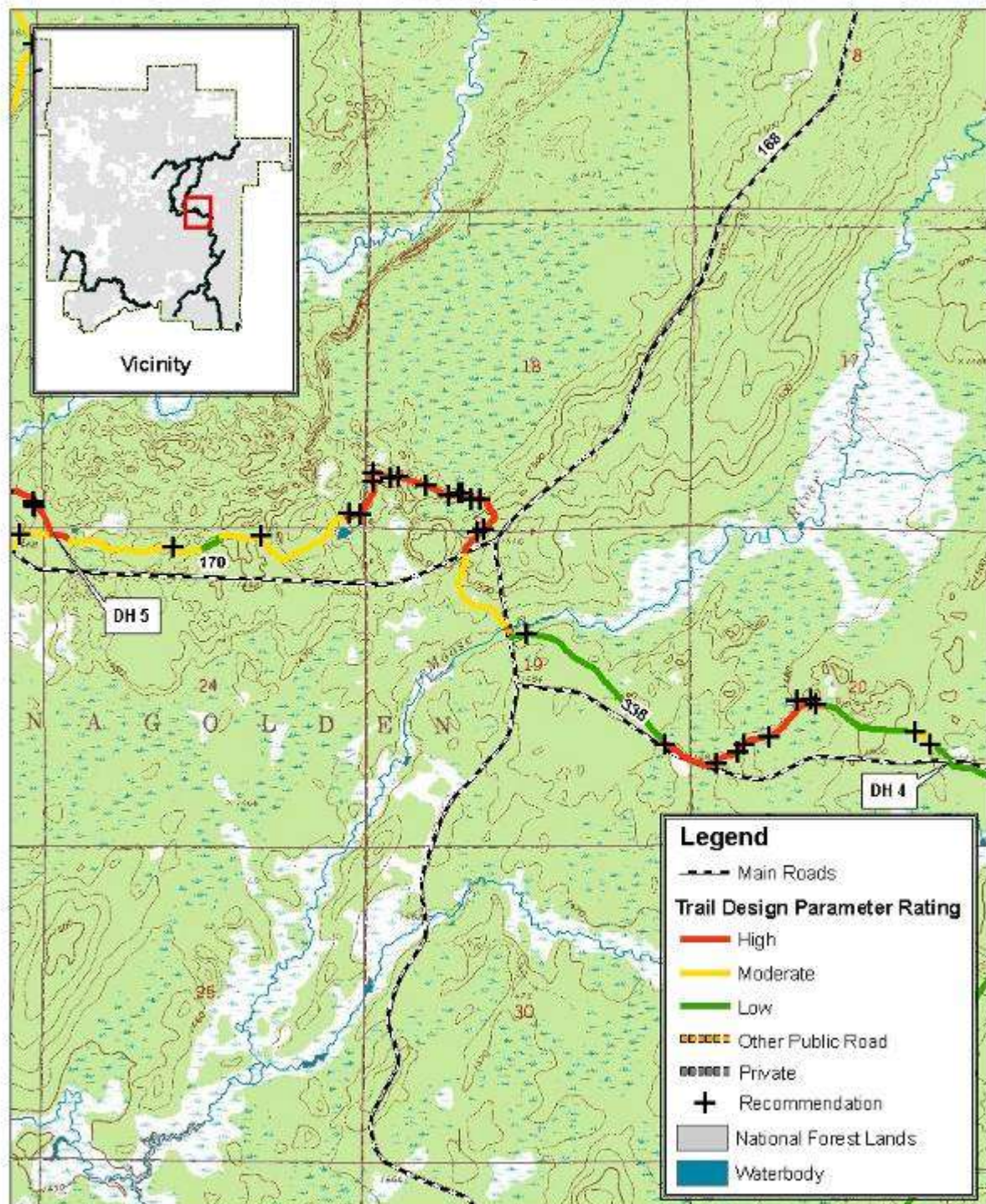
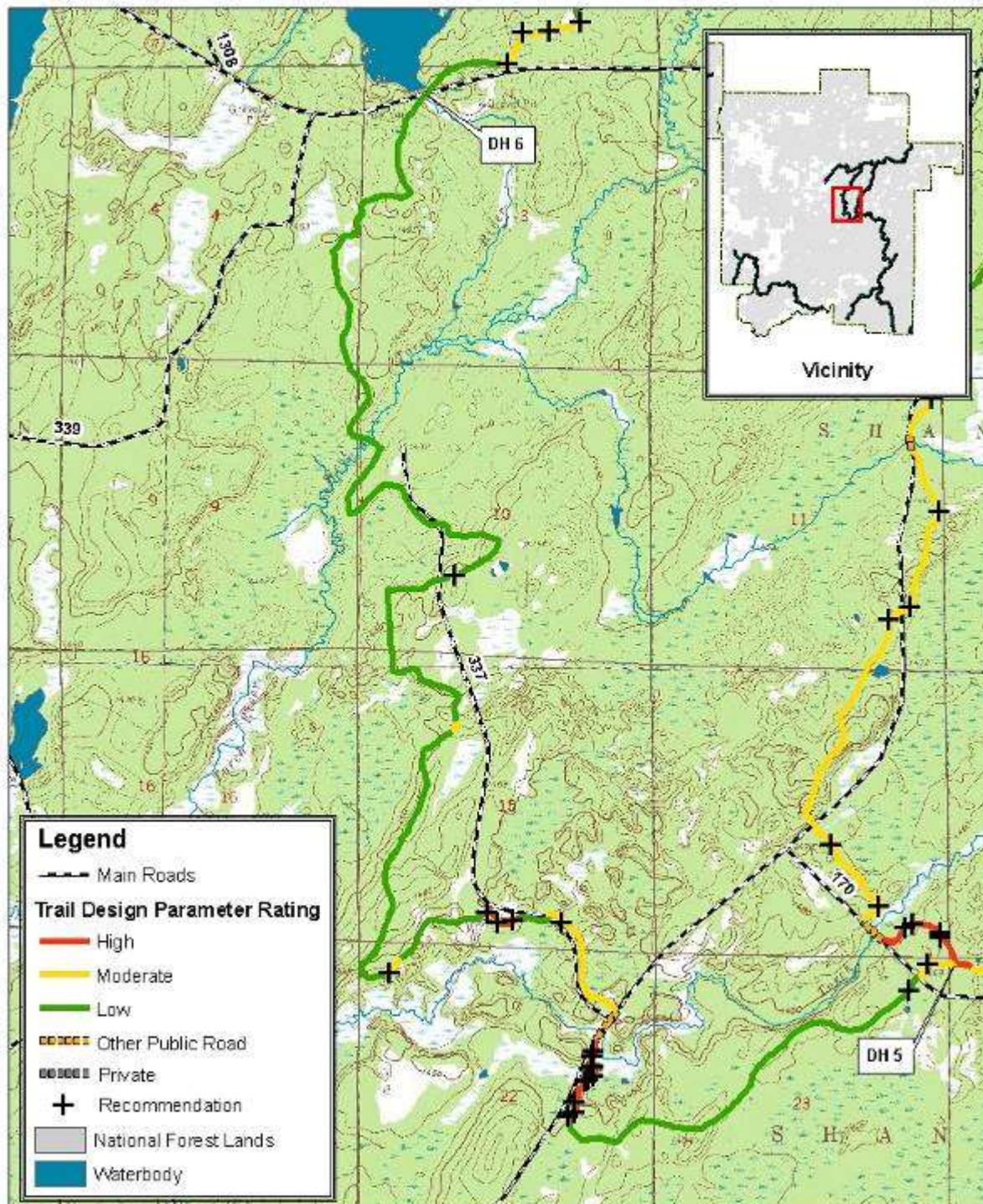
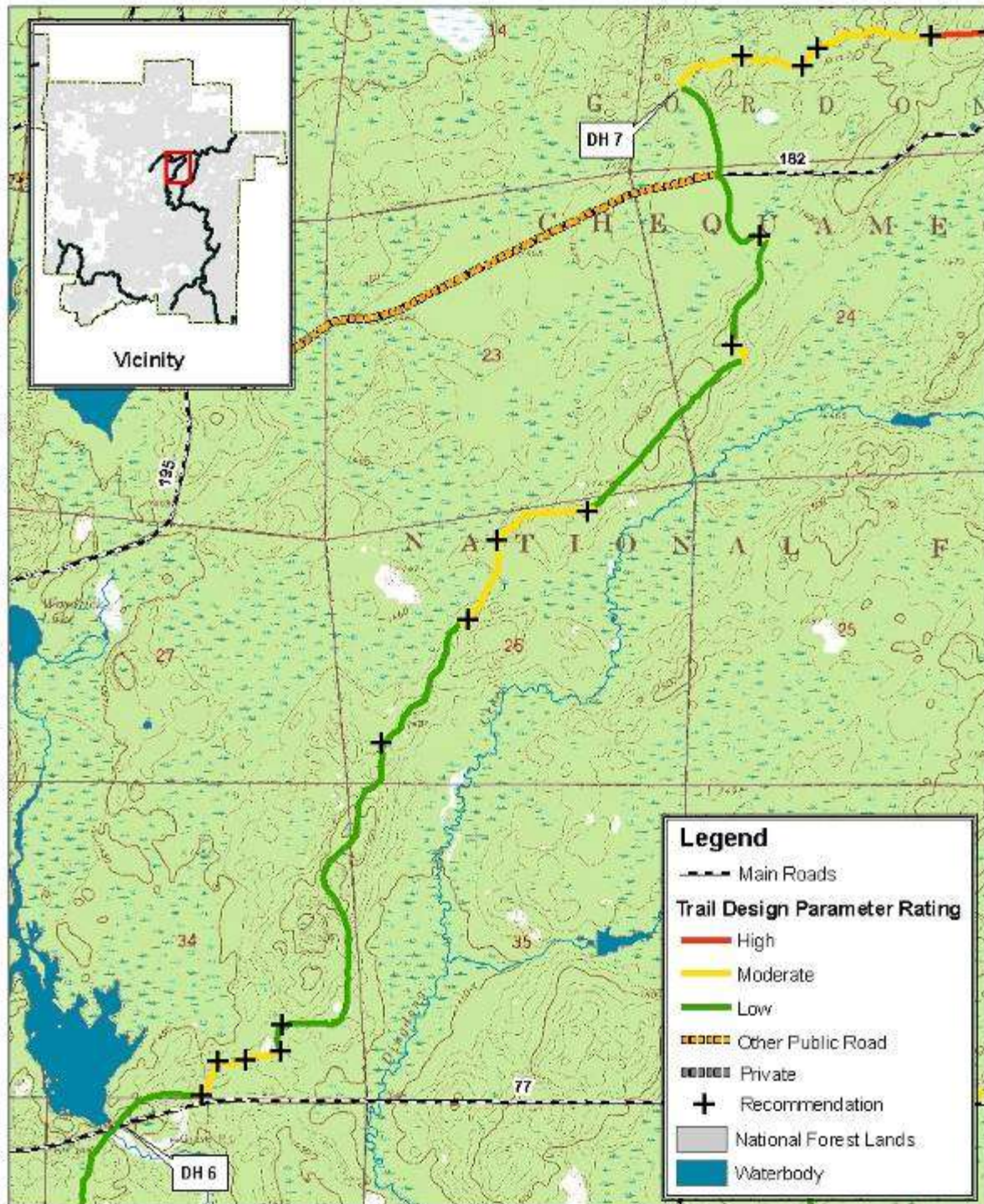
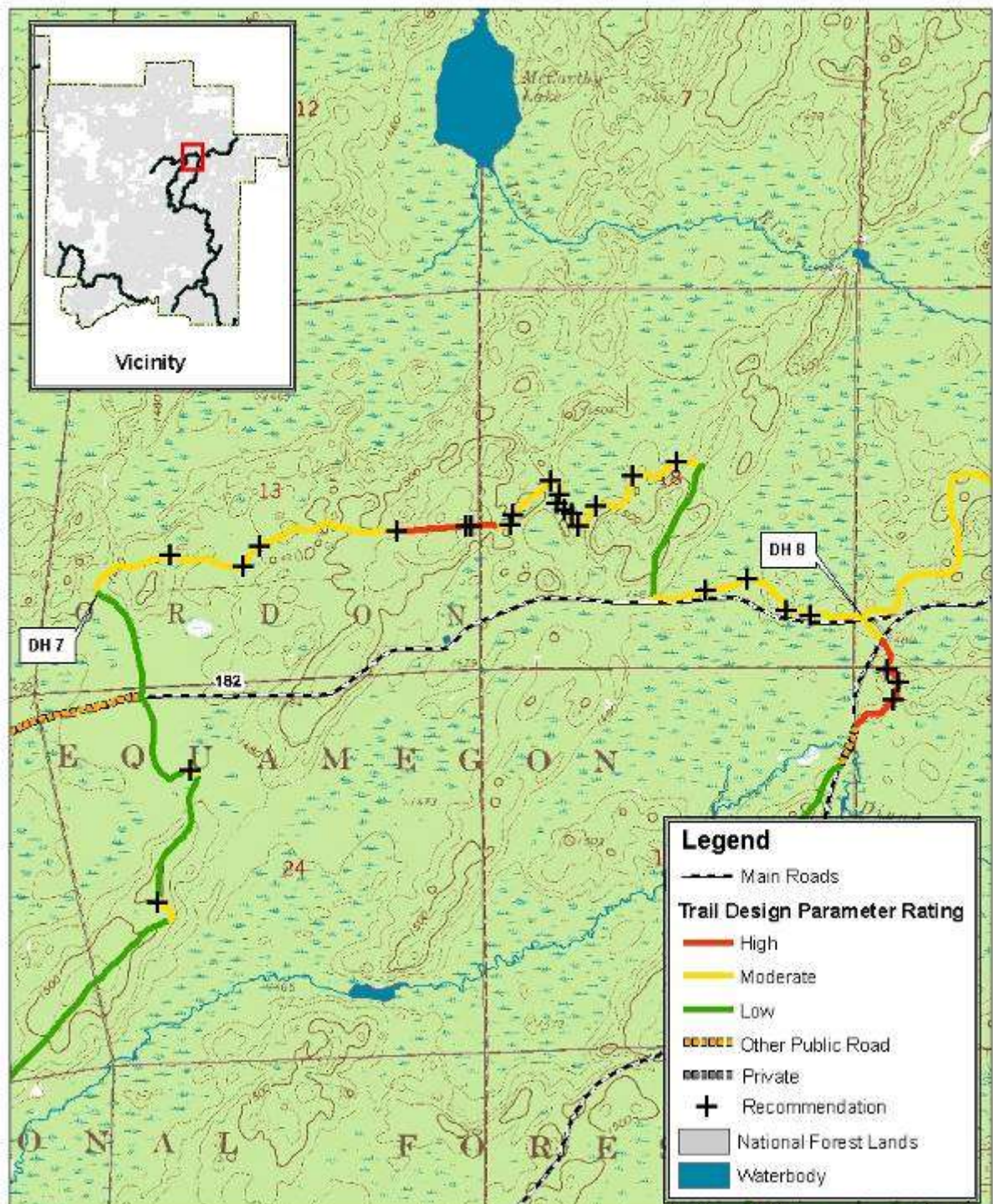


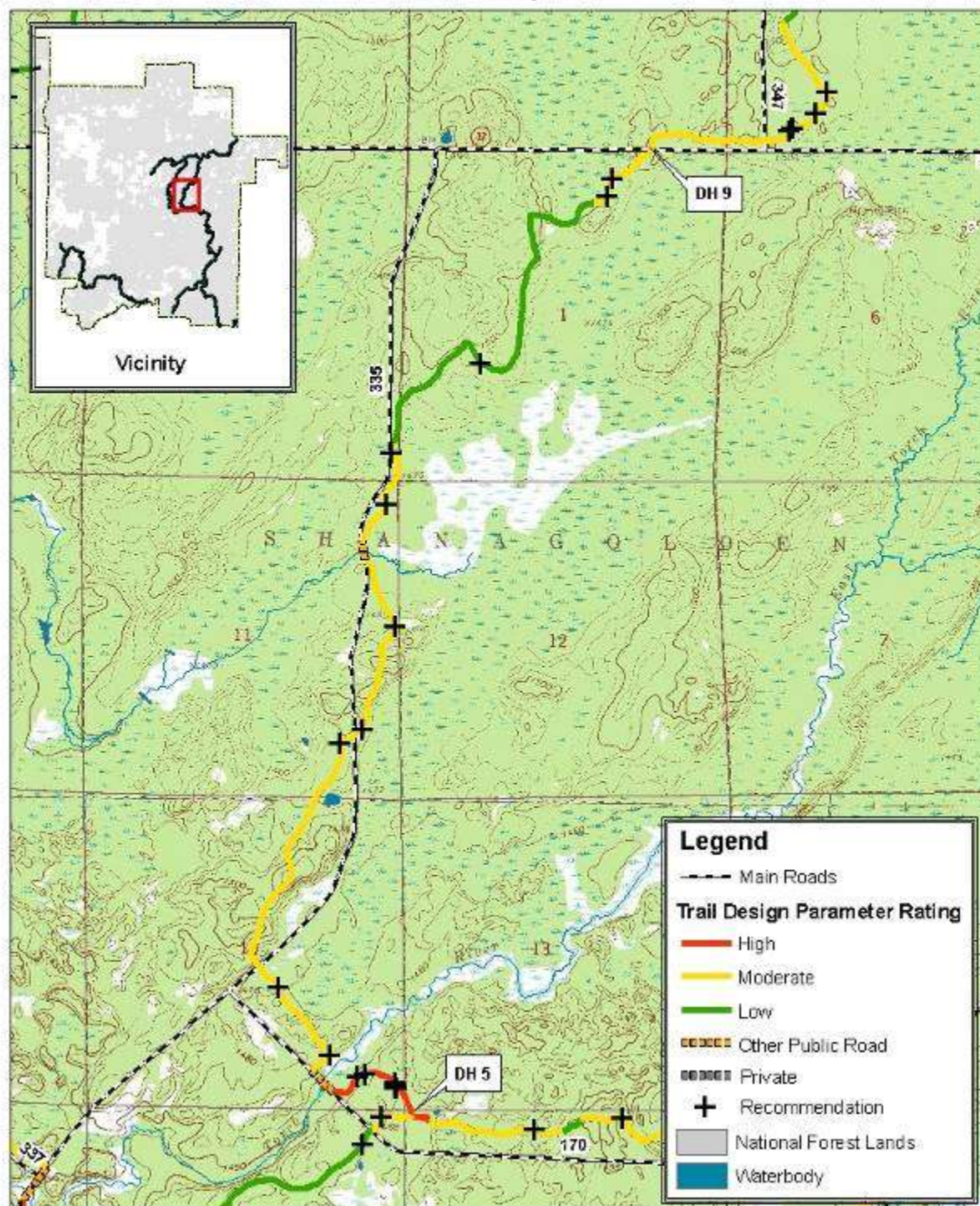
Figure B-9

Design Parameter Assessment - Dead Horse (DH 5 - DH 6)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-10**

Design Parameter Assessment - Dead Horse (DH 6 - DH 7)Chequamegon - Nicolet National Forests
Great Divide Ranger District

[Figure B-11](#)

Design Parameter Assessment - Dead Horse (DH 7 - DH 8)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-12**

Design Parameter Assessment - Dead Horse (DH 5 - DH 9)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-13**

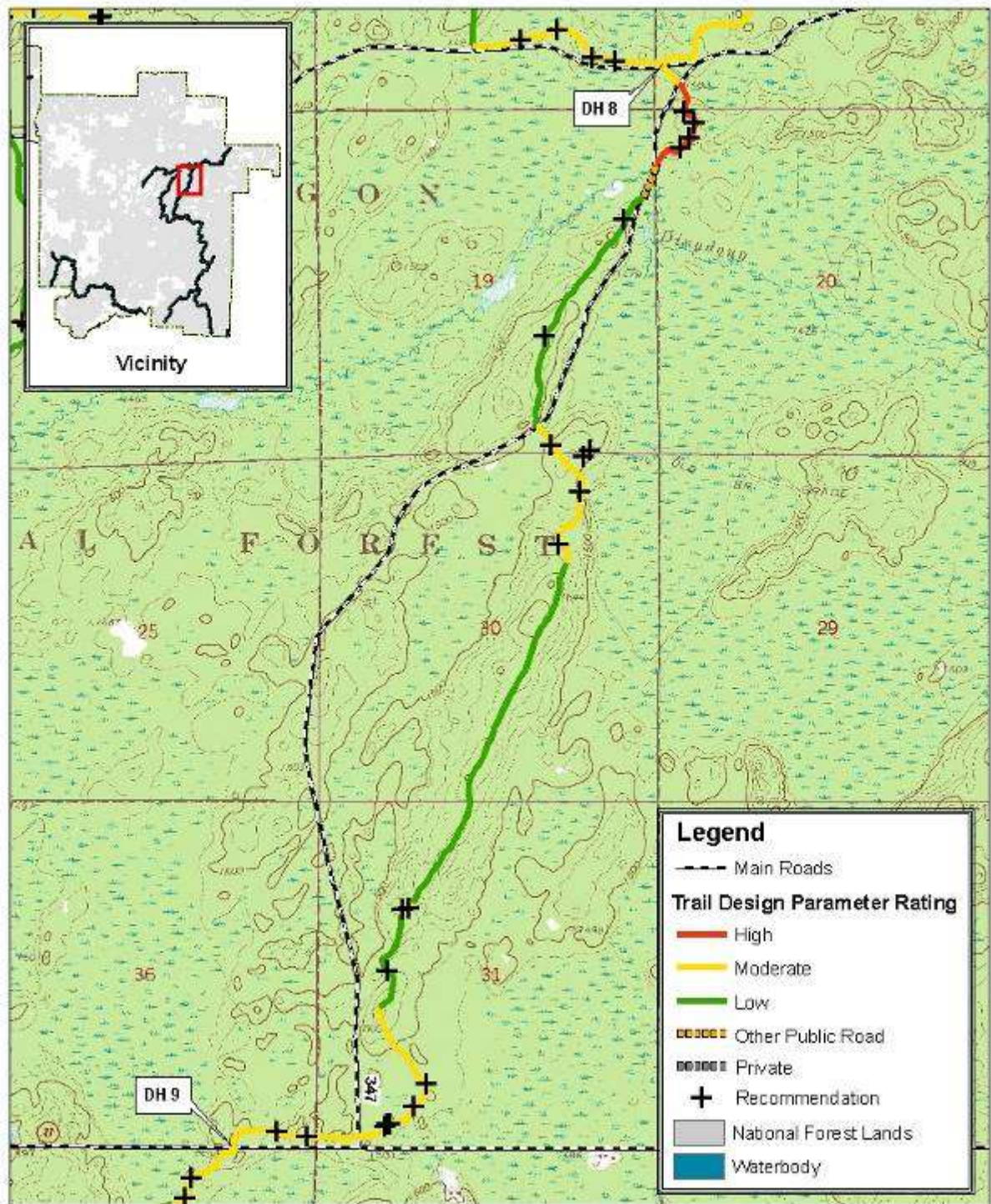
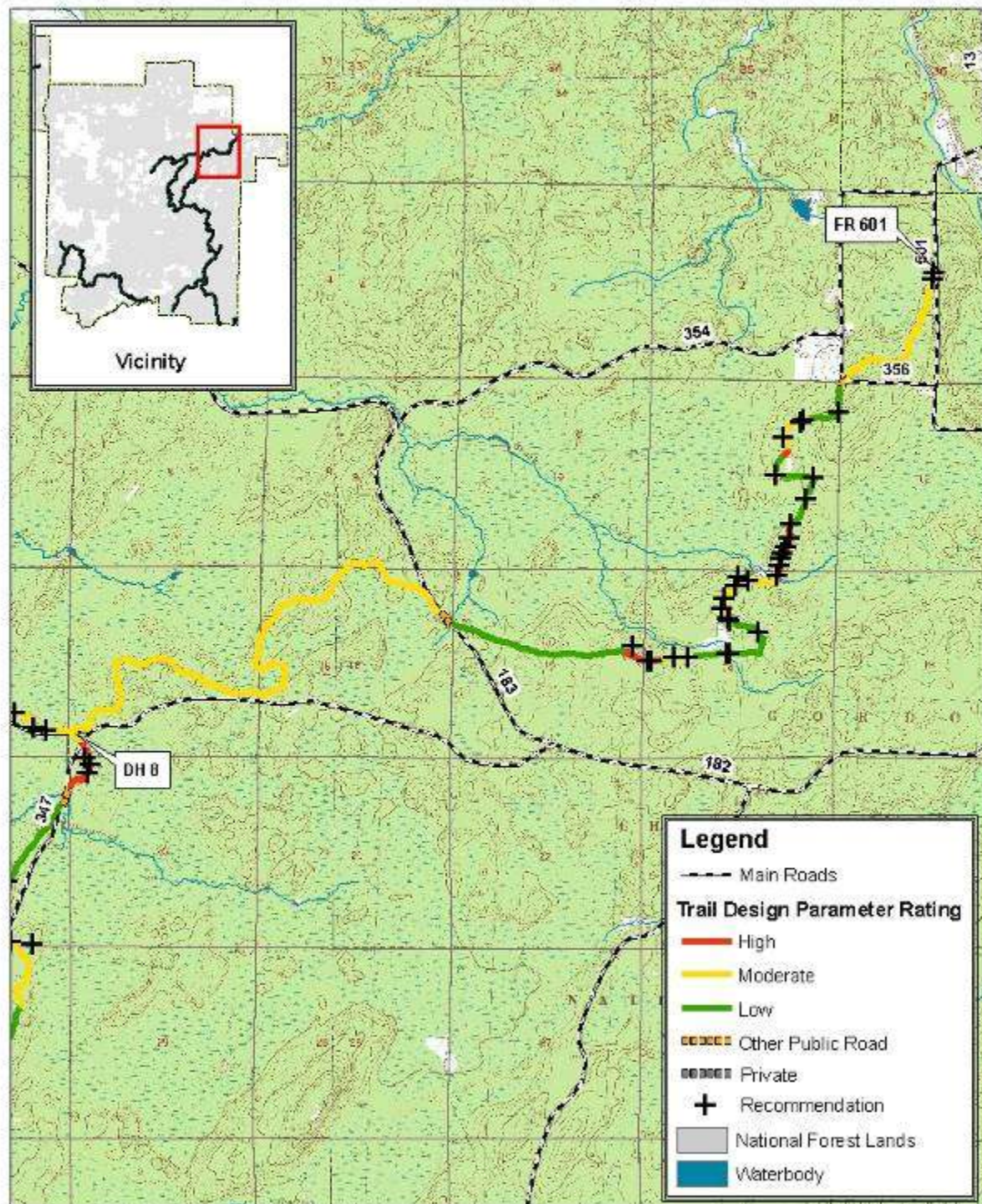
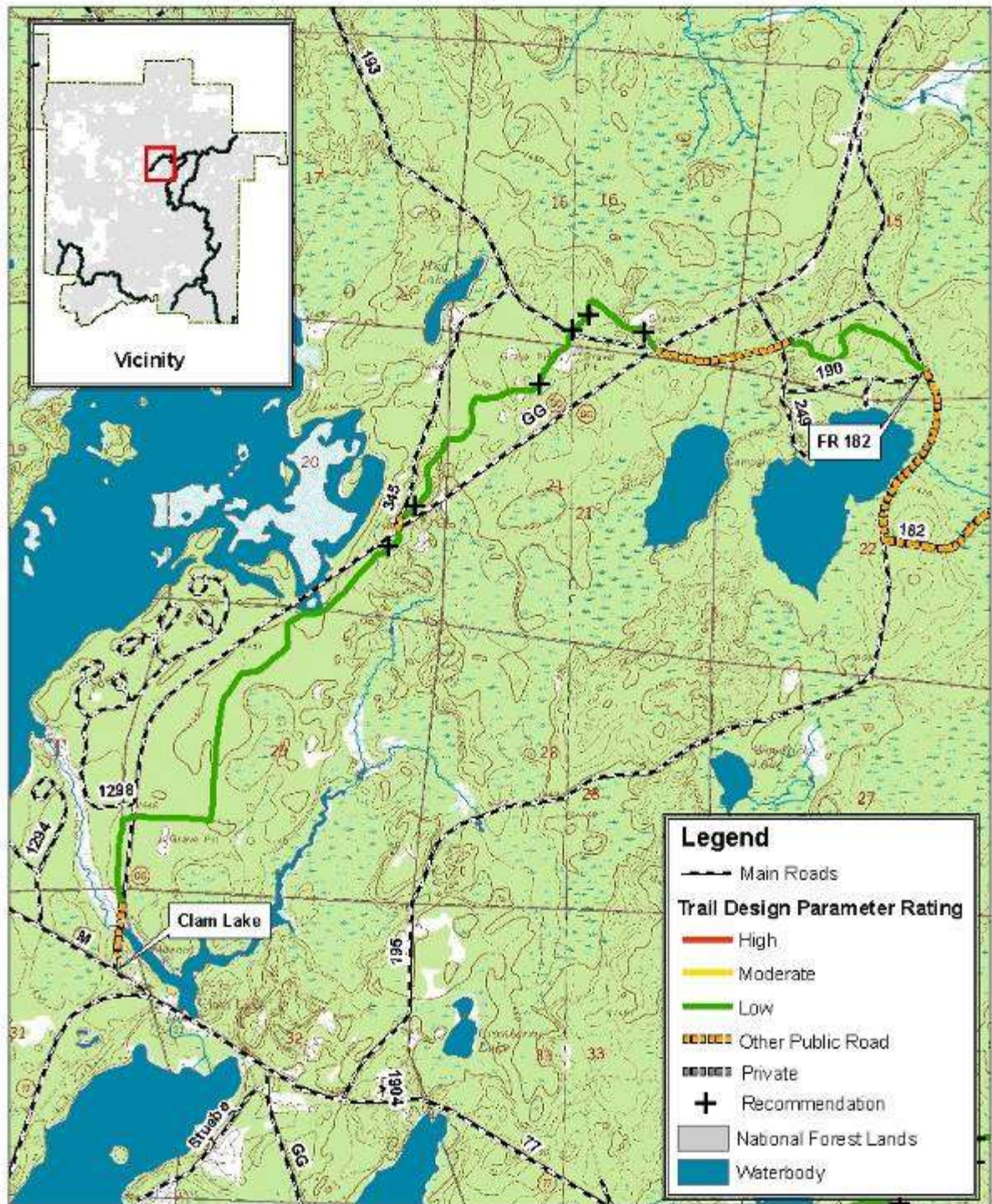
Design Parameter Assessment - Dead Horse (FT 214; DH9 - DH 8)Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure B-14

Design Parameter Assessment - Dead Horse (FT 214B; DH 8 - FR 601)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-15**

Design Parameter Assessment - Dead Horse (FT 214C; Clam Lake - FR 182)Chequamegon - Nicolet National Forests
Great Divide Ranger District**Figure B-16**

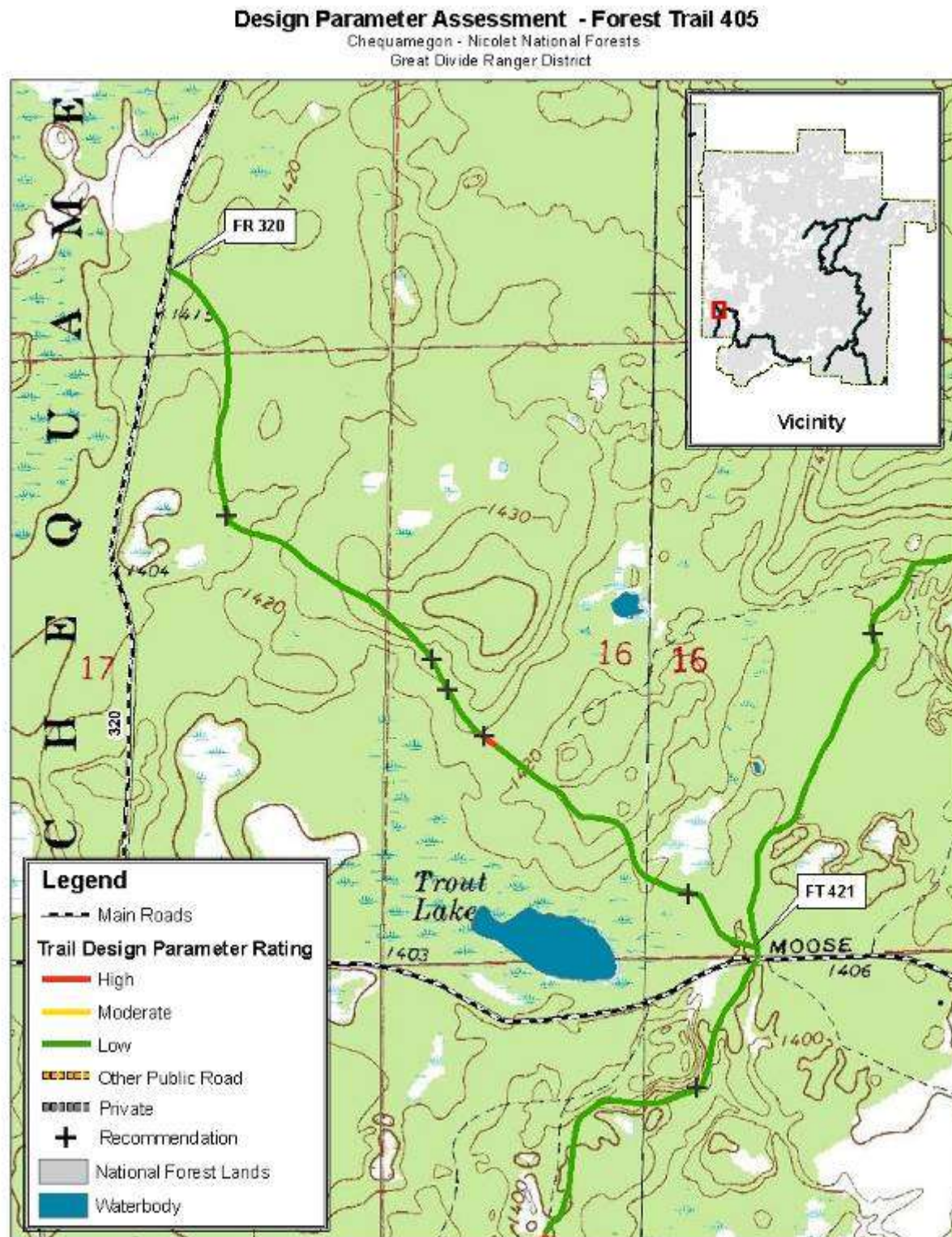


Figure B-17

Design Parameter Assessment - Forest Trail 421 (FR 319 - Sawyer CTY S)

Chequamegon - Nicolet National Forests
Great Divide Ranger District

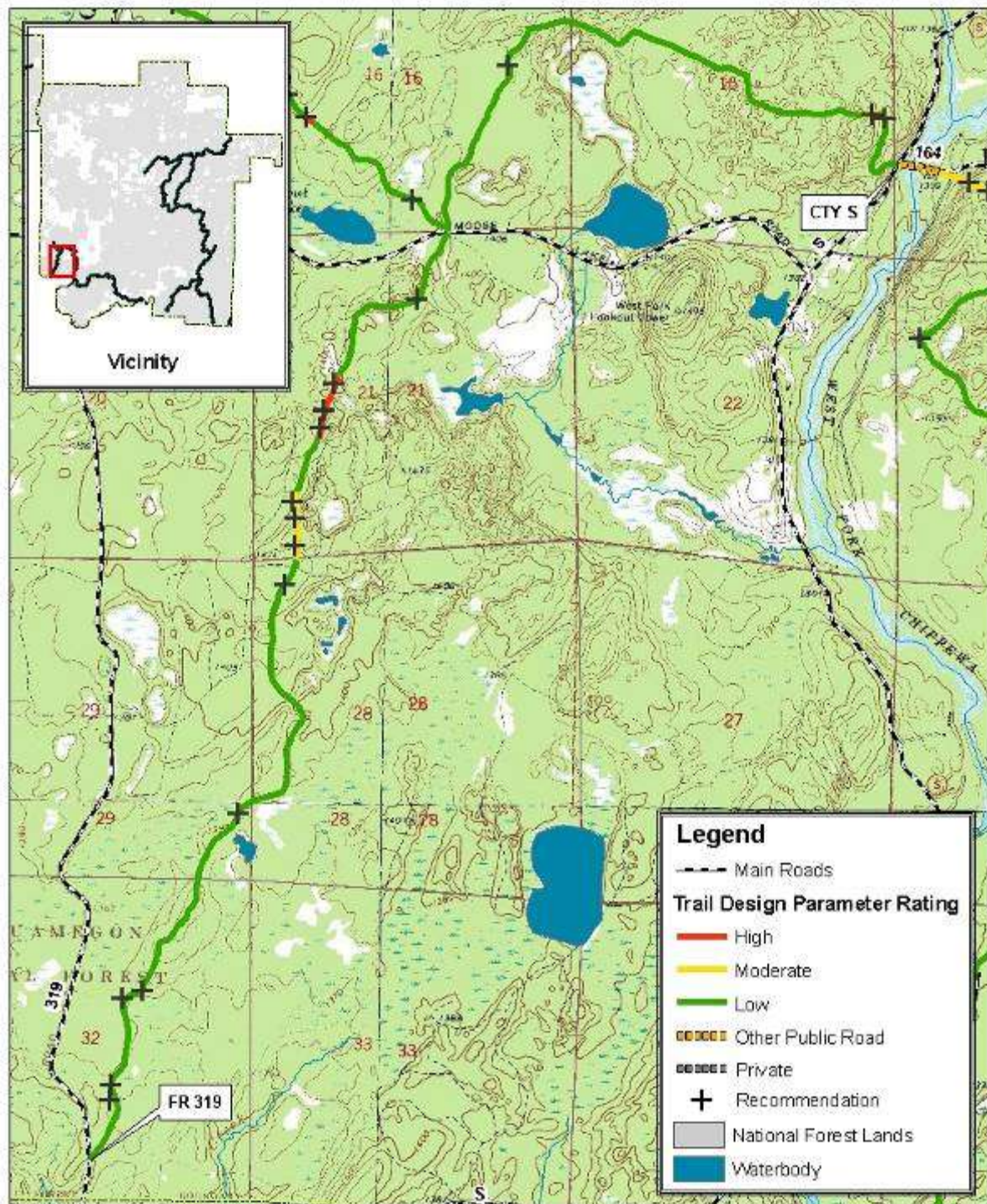


Figure B-18

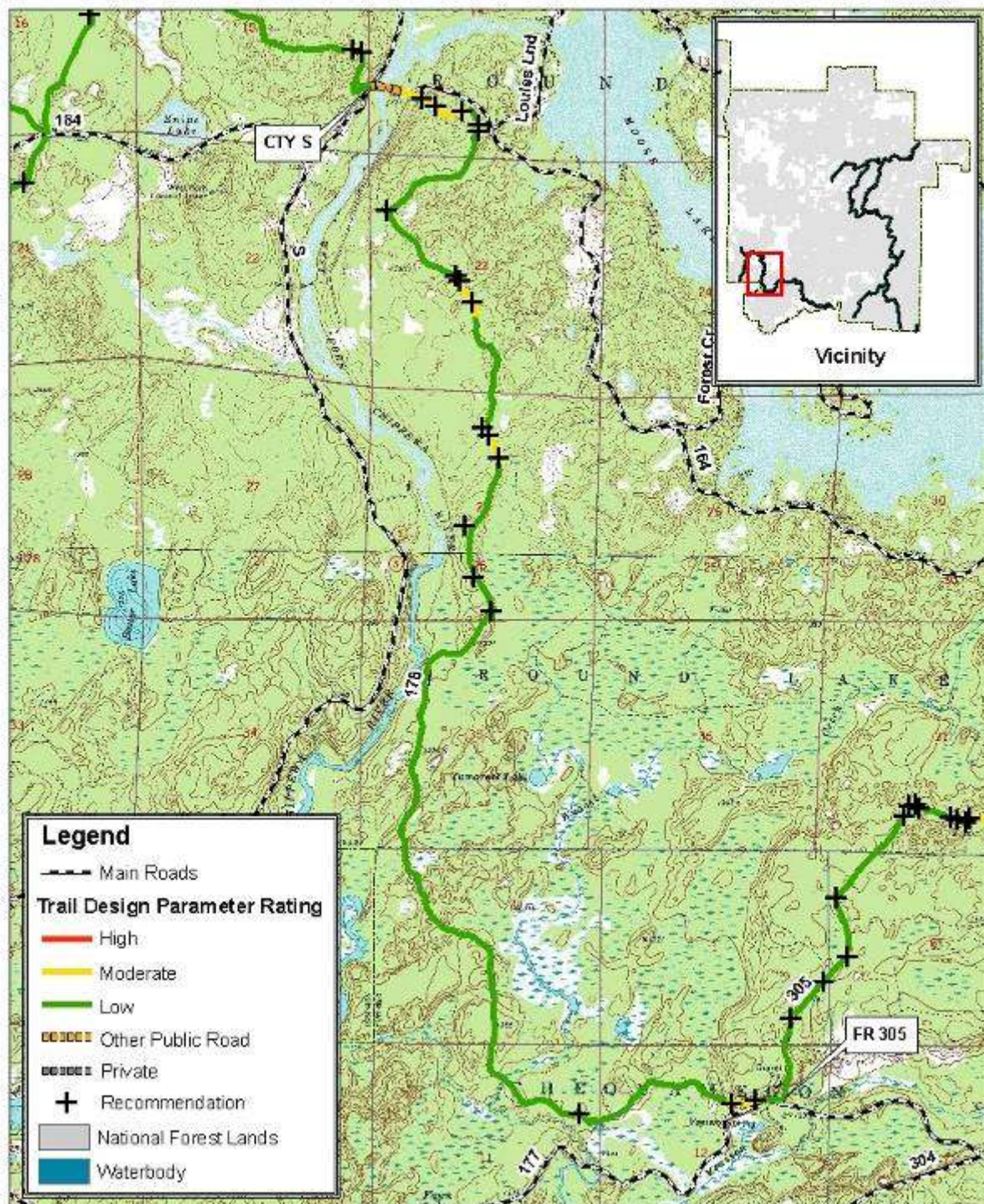
Design Parameter Assessment - Forest Trail 421 (Sawyer CTY S - FR 305)Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure B-19

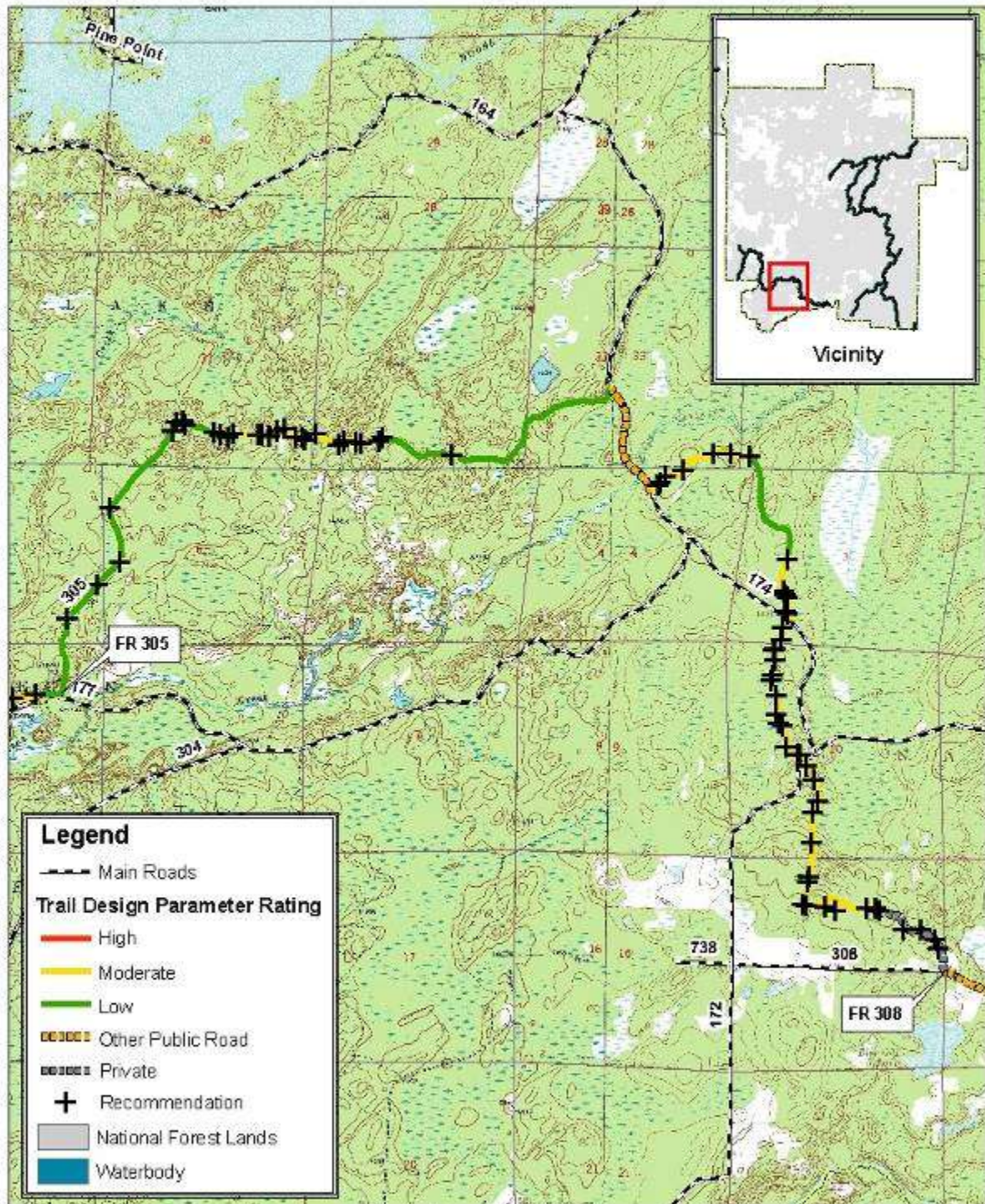
Design Parameter Assessment - Forest Trail 421 (FR 305 - FR 308)Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure B-20

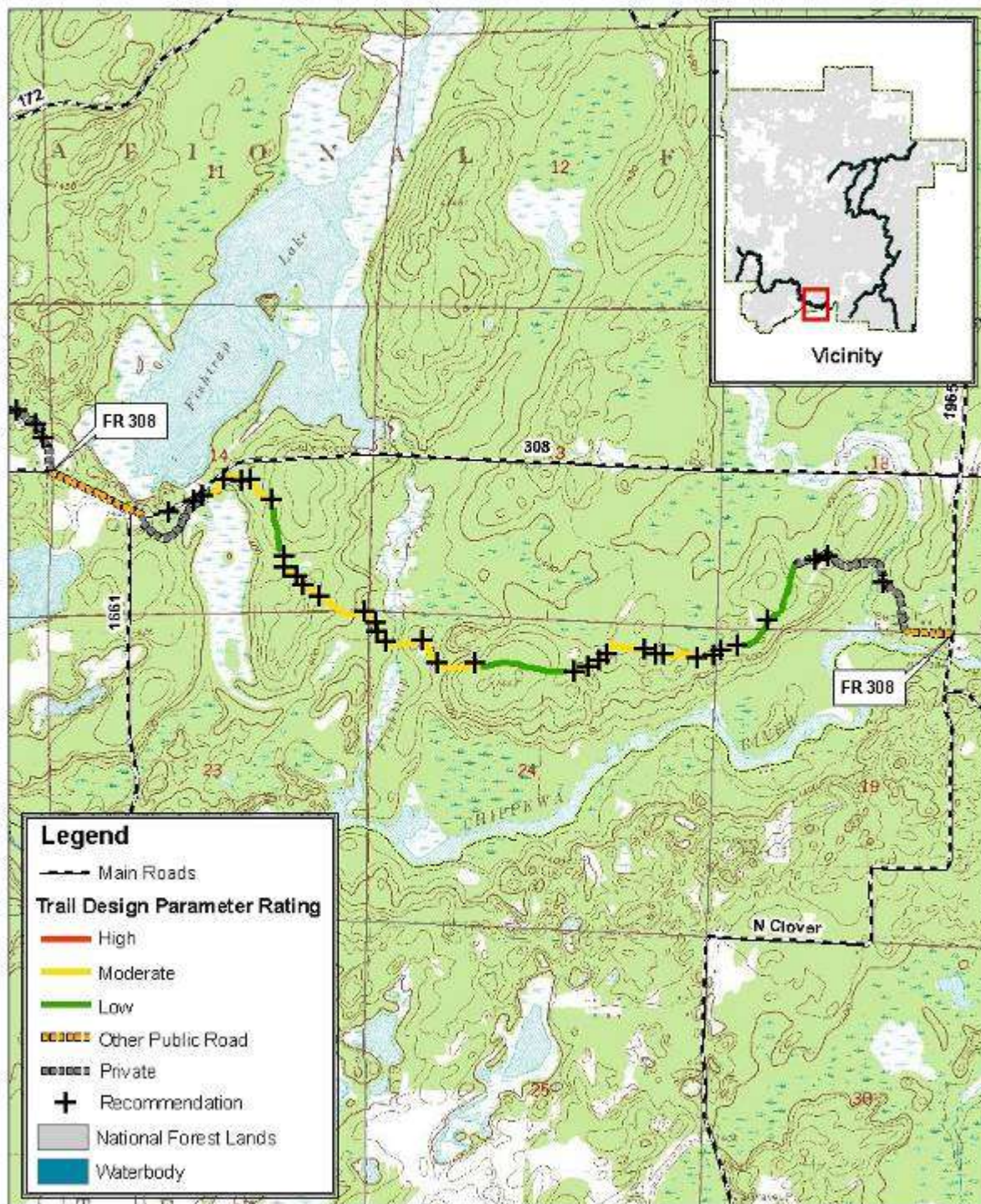
Design Parameter Assessment - Forest Trail 421 (FR 308 - FR 308)Chequamegon - Nicolet National Forests
Great Divide Ranger District

Figure B-21

APPENDIX C - PHOTOGRAPHS



Photo C-1
Example of narrow tread width coupled with narrow clearing limits



Example of tread width exceeding minimum standards with adequate clearing limits (ideal situation)



Photo C-3
Example of limited sight distance on horizontal curve (10 feet)



Photo C-4
Example of large radius curves (>100 feet)



Photo C-5
Example of limited sight distance on
Vertical curve (15 feet)



Photo C-6
Example of large radius vertical curve